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# Stormwater Management Report

## PRC Hightstown

Tract A: Block 21; Lots 1-14, 20 & 26  
Tract B: Block: 30; Lots: 1-7 & 10-13  
Tract C: Block 8; Lot 12

Borough of Hightstown, Mercer County, New Jersey

## AUGUST 2020

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## **INTRODUCTION**

This stormwater management report is being submitted as part of the site plan development application known as Hightstown Redevelopment located on Lots 1-14, 20 and 26, Block 21 (Tract A), Lots 1-7 and 10-13, Block 30 (Tract B), and Lot 12, Block 8 (Tract C) as shown on Sheets 2 and 9 of the Official Tax Map of the Borough of Hightstown, Mercer County, New Jersey. This report was prepared in accordance with the New Jersey Department of Environmental Protection (NJDEP) regulations, Delaware and Raritan Canal Commission (DRCC) regulations, and current industry standards and practices for stormwater management. The purpose of this report is to summarize the stormwater management design as it pertains to the stormwater rules and to provide calculations to support the design. The stormwater management measures proposed for the site have been designed to meet the standards as set forth by N.J.A.C 7:8 (stormwater quantity, quality groundwater recharge and nonstructural measures) and the standards as enforced by the Mercer County Soil Conservation District (soil erosion and sediment control).

Tract A of the project area contains existing vacant industrial facilities. The proposed development consists of a mixed-use re-development that will include townhouses and apartments in a combination of new and redeveloped buildings, along with associated parking.

Tract B of the project area contains existing vacant industrial facilities, the Hightstown Engine Co. No. 1, and the Borough of Hightstown Municipal Building. The proposed development consists of a mixed-use re-development that will include multi-family and commercial uses in a combination of new and redeveloped buildings, structured parking and appurtenant improvements.

Tract C of the project area contains an existing single-family residential home. The proposed development consists of a townhouse building and associated parking along with a leasing and amenity center for the project.

Additional site improvements include, but are not limited to, the construction of parking lots, landscaping, storm sewers, and utilities.



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## **LOCATION & EXISTING CONDITIONS OF SITE**

The overall subject property, consisting of approximately 11.0 +/- acres, is located in the Borough of Hightstown, Mercer County, New Jersey. Tract A and B of the subject property is bounded by North Academy Street to the west, Bank Street to the North, and North Main Street to the east. The site is bisected by a stream known as Rocky Brook which flows to the north under Bank Street. Tract C of the subject site is bounded by North Academy Street to the West, Bank Street to the South, and Rocky Brook to the East and North. The location of the site is shown on the maps included in the Appendix.

Tract A of the project is located on the West side of the brook and consists of approximately 4.6 +/- acres. The property contains existing vacant industrial buildings and associated asphalt and gravel driveways and parking areas. Tract A contains a drainage ditch runs along the south side of the tract between North Academy Street and Rocky Brook. A 36" corrugated metal pipe conveys runoff collected by the municipal storm sewers to the upstream (east) end of the site to the ditch and a 36" reinforced concrete pipe at the downstream (west) end of the ditch connects to the Brook. The majority of the site runoff enters Rocky Brook either by sheet flow or piped discharges, either to the ditch or directly to the Brook. A small portion of the site runs off to Bank Street where it enters the municipal storm sewer which discharges to the Brook downstream of the site.

Tract C of the project is located on the north side of Bank Street and consists of approximately +/- 2.09 acres of proposed development area on the West side of the Brook. The majority of the site runs off to the brook from sheet flow with small portions running off to Bank Street.



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## **SOIL CHARACTERISTICS**

The existing soil classifications for the site are based on the USDA NRCS Web Soil Survey. The survey is useful at the planning level to draw general conclusions about the suitability of a site for certain land uses. Based on the web site data, the site consists of the following soil types:

<b><u>SOIL NAME</u></b>	<b><u>HYDROLOGIC GROUP</u></b>
FodC – Fort Mott, loamy, 0 to 3% slopes	A
HcuAt – Hatboro-Codorus Complex, 0 to 3% slopes	B/D
OthA – Othello silt loams, 0 to 2% slopes	C/D
SacB – Sassafras sandy loam, 2 to 5% slopes	B
SacC – Sassafras sandy loam, 5 to 10% slopes	B

Test pits and borings were performed on site to determine the seasonal high water table and subsurface conditions. For additional soils information, refer to report entitled “Report of Subsurface Exploration and Infiltration Evaluation, Hightstown Redevelopment”, dated July 18, 2017, a report entitled “Report of Subsurface Exploration and Foundation Evaluation, Hightstown Redevelopment”, dated March 13, 2018, and a report entitled “Report Infiltration Evaluation, Hightstown Redevelopment”, dated March 23, 2020, all prepared by Maser Consulting.

## **WETLANDS**

Freshwater wetlands are present on the subject property. An LOI, NJDEP File No. 1104-04-0002.1, was issued on March 4, 2004 for Tracts A and B (see Appendix). The wetlands on Tract A and B are associated with State Open Waters and a buffer is not required. Portions of the wetlands on Tract C are classified as Extraordinary Resource Value and will have a 50-foot transition area. The development has been designed in accordance with the regulations set forth by the NJDEP-Land Use Regulation Program. An updated LOI is pending.

## **FLOOD PLAINS AND RIPARIAN ZONES**

Portions of the site are within the flood hazard and/or riparian zone of the Rock Brook. An NJDEP Flood Hazard Area Verification was obtained under File No.: 1104-04-0002.2 LUP 200001. The



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NJDEP FHA elevation varies across the site with elevations between 82.9 to 82.7 upstream of Bank Street and elevations between 81.9 to 81.8 downstream of Bank Street. The floodways have been verified based on FEMA mapping. The Brook has a 150-foot Riparian Zone from the top of bank. Regulated areas are shown on the plans and a copy of the FHA Verification is included in the appendix.

### **DRCC REVIEW ZONE**

The site is located within the DRCC Review Zone B and is classified as a Major Project and is therefore subject to DRCC stormwater review. The project has been designed to comply with the DRCC requirements for stormwater management, specifically in regards to the additional water quality requirements as outlined below.

### **COMPLIANCE STATEMENT**

This project is designed in accordance with N.J.A.C. 7:8 and the DRCC requirements. Compliance in each of these areas is explained in detail in the remainder of this report and verified with calculations as appropriate in the Appendix.

### **STORMWATER MANAGEMENT METHODOLOGY**

The stormwater runoff resulting from the proposed development must be managed both qualitatively and quantitatively in accordance with the NJDEP and DRCC requirements.

To evaluate the proposed site for compliance with the above standards, the Unit Hydrograph method and the HydroCAD v10.10-3a hydrologic/hydraulic model from HydroCAD Software Solutions were utilized. The Delmarva Unit Hydrograph and a NRCC Type C storm distribution was utilized for modeling both the existing and proposed conditions. The Standard Unit Hydrograph was used for Water Quality BMP sizing (Manufactured Treatment Devices and porous pavement). The majority of the existing and proposed site are paved with storm sewers with short time of concentrations therefore a minimum time of concentrations of 6 minutes was



utilized for on-site areas. Times of concentration were calculated for the off-site drainage areas and are shown on the drainage area maps and included in the HydroCAD output.

The analysis and compliance for each of the three tracts has been demonstrated separately as outlined below:

## **TRACT A:**

### **TRACT A STUDY AREAS**

The drainage areas utilized to analyze and calculate the stormwater quantity requirements for this development were established based on the proposed hydrologic limits of disturbance and the existing and proposed topography. The following is a listing of the existing and proposed points of analysis and drainage areas used in this report and a description of their location:

#### **Points of Analysis:**

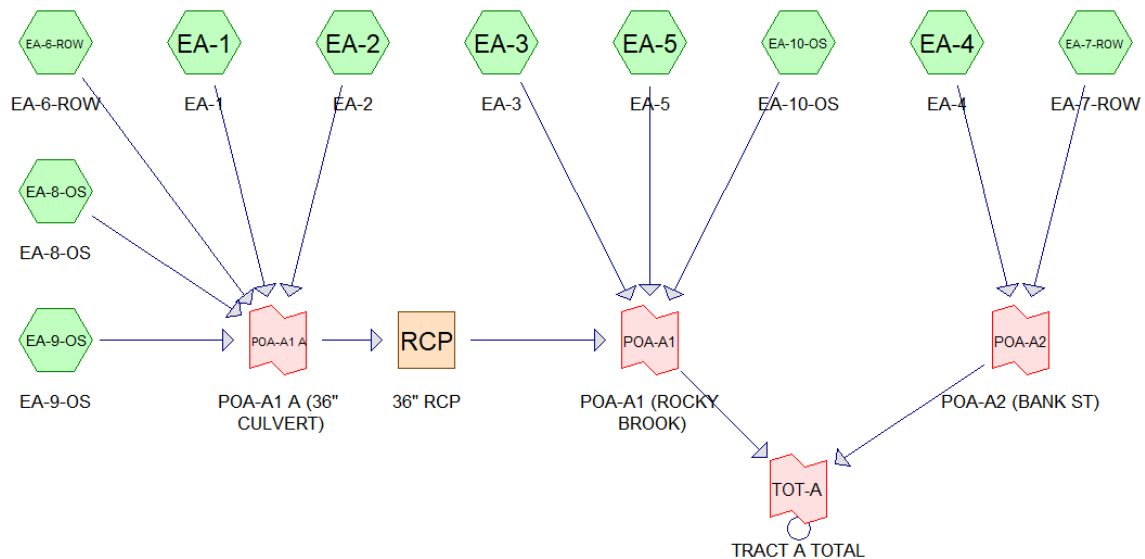
POA-A1 – Rocky Brook Headwall

POA-A1A – Upstream end of 36” RCP draining to Rocky Brook

POA-A2 – Bank Street



## Existing Drainage Areas:



- Existing DA EA-1 – On-site drainage area consisting of roof and landscape area along North Academy Street collected by an inlet and discharged via pipe to a drainage ditch and 36” RCP culvert (POA-A1 A) discharging to Rocky Brook (POA-A1).
- Existing DA EA-2 – On-site drainage area consisting of roof and pavement. Sheet flows to drainage ditch and 36” RCP culvert (POA-A1 A) discharging to Rocky Brook (POA-A1).
- Existing DA EA-3 – On-site drainage area consisting of roof and pavement. Sheet flows to downstream end of 36” culvert in ditch at confluence with Rocky Brook (POA-A1).
- Existing DA EA-4 – On-site drainage area consisting of Roof along Bank Street that discharges within the site and runs off to Rocky Brook (POA-A1).
- Existing DA EA-5 – On-site drainage area consisting of Roof along Bank Street that discharge to Bank street where it flows to the existing storm sewer (POA-A2).
- Existing DA EA-6-ROW – Off-site drainage area consisting of Academy Street sidewalks and Roadway frontage being modified as part of this project.

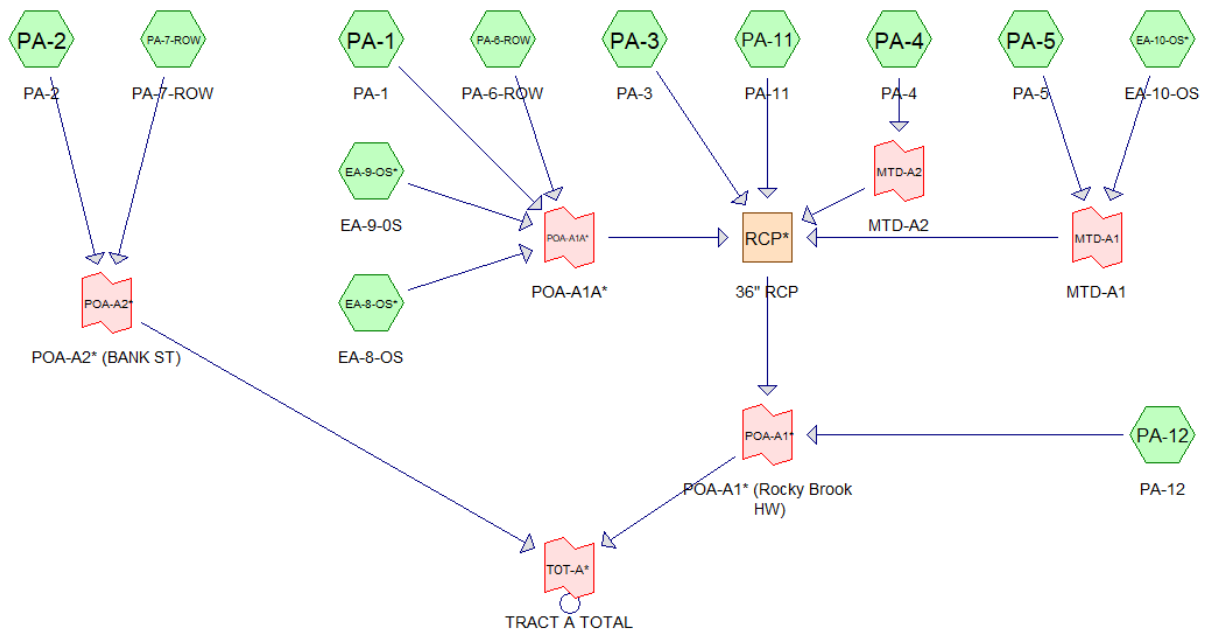




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- Existing DA EA-7-ROW – Off-site drainage area consisting of Bank Street sidewalks and roadway frontage being modified as part of this project. Stormwater collects within the existing storm system within Bank Street (POA-C2).
- Existing DA EA-8-OS – Off-site drainage area to the east of the project that is collected by storm sewers and discharged to the west end of the drainage ditch. This area has been modeled to assess the capacity of the on-site culvert. The area has been modeled as 30% impervious coverage based on aerial imagery. For this analysis it has been assumed the entire area reaches the site by way of the storm sewer which ties into the off-site ditch and 36” RCP culvert (POA-A1 A) discharging to Rocky Brook (POA-A1).
- Existing DA EA-9-OS – Off-site drainage area consisting of residential lots to the south of the site that sheet flows to the drainage ditch and 36” RCP culvert (POA-A1 A) discharging to Rocky Brook (POA-A1).
- Existing DA EA-10-OS – Off-site drainage area consisting of residential and commercial lots to the south of the site that sheet flows through the site and into the Brook (POA-A1).



## Proposed Drainage Areas:



### Proposed DA P1A

- On-site drainage area consisting of landscape areas, sidewalks, and porches that do not require treatment that is running off to the storm system within North Academy Street which ties into the off-site ditch and 36” RCP culvert (POA-A1 A) discharging to Rocky Brook (POA-A1).

### Proposed DA PA-2

- On-site drainage area consisting of landscape areas, sidewalks, and porches that do not require treatment that is running off to the storm system within Bank Street ties into the right-of-way storm system (POA-A2).

### Proposed DA PA-3

- On-site drainage area consisting of Brick Mill roofs, landscape areas, and sidewalks that do not require treatment that is collected by the “the on-site “clean” stormwater sewer tied into the existing 36” RCP culvert discharging to the Rocky Brook (POA-A1).

### Proposed DA PA-4

- On-site drainage area consisting of landscaping and pavement. This area is collected by the proposed storm sewer, treated for 80% TSS



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- removal by MTD-A2-2 tied into the existing 36" RCP culvert discharging to the Rocky Brook (POA-A1).
- Proposed DA PA-5 – On-site drainage area consisting of landscaping, surface pavement, and structured parking. This area is collected by the proposed storm sewer, treated for 80% TSS removal by MTD-A1-1 tied into the existing 36" RCP pipe discharging to the Rocky Brook (POA-A1).
- Proposed DA PA-6-ROW – Off-site drainage area consisting of plantings, sidewalks and roadway present within the right-of-way. Stormwater collects within the existing storm system in North Academy Street which ties into the off-site ditch and 36" RCP culvert (POA-A1 A) discharging to Rocky Brook (POA-A1).
- Proposed DA PA-7-ROW – Off-site drainage area consisting of plantings, sidewalks and roadway present within the right-of-way. Stormwater collects at POA-2 within the existing storm system in Bank Street ties into the right-of-way storm system (POA-A2).
- Proposed DA EA-8-OS – Off-site drainage area to the east of the project that is collected by storm sewers and discharged to the west end of the drainage ditch. This area has been modeled to assess the capacity of the on-site culvert (POA-A1 A). The area has been modeled as 30% impervious coverage based on aerial imagery. For this analysis it has been assumed the entire area reaches the site by way of the existing municipal storm sewer.
- Proposed EA-9-OS – Off-site drainage area consisting of residential lots to the south of the site that sheet flows to the drainage ditch (POA-A1).
- Proposed EA-10-OS – Off-site drainage area consisting of residential and commercial lots to the south of the site that sheet flows through the site and into the Brook (POA-A1).
- Proposed DA PA-11 – On-site drainage area consisting of townhouse roofs, landscaped areas, and porches/sidewalks that do not require treatment that is



collected by the on-site “clean” storm sewer tied into the existing 36” culvert discharging to the Rocky Brook (POA-A1).

Proposed DA PA-12 – On-site drainage area consisting of undisturbed areas along the bank of Rocky Brook sheet flowing and discharging to Rocky Brook (POA-A1).

### **TRACT A EXISTING CONDITIONS**

To calculate the allowable outflow from the proposed site, the existing drainage areas were analyzed to individual points of analysis (POA). POA-1 is the onsite Rocky Brook. For the purpose of analyzing the capacity of the existing 36” RCP between the drainage ditch and the Brook an intermediate analysis point POA-1A was included. POA #2 is the Bank Street storm sewer.

The existing peak flows to the point of analysis are summarized in the following table:

STORM (YEAR)	DISCHARGE TO POA-A1 A (CFS)	DISCHARGE TO POA-A1 (CFS)	DISCHARGE TO POA-A2 (CFS)
1	15.49	17.05	0.46
2	20.97	22.79	0.57
10	41.83	44.70	0.92
25	85.51	62.12	1.19
100	91.50	96.46	1.71

The majority of the site runoff discharges to POA 1 (Rocky Brook) with portion of the existing site roofs discharging to Bank Street. Most of the existing on-site runoff sheet flows directly into the Brook and a portion flows to the drainage ditch. The majority of the offsite runoff passing through the site is carried by the drainage ditch and the 36” RCP culvert.

### **TRACT A PROPOSED CONDITIONS**

The proposed site will maintain the existing drainage pattern with the majority of the site discharging to the Brook and a portion of the existing building continuing to drain to Bank Street. Under proposed conditions the site storm sewers will be connected to the 36” RCP discharging to



the Brook rather than sheet flowing. The project will result in a net decrease of approximately half an acre of impervious surface.

The proposed peak flows to the point of analysis are summarized in the following tables:

STORM (YEAR)	DISCHARGE TO POA-A1 A (CFS)	DISCHARGE TO POA-A1 (CFS)	DISCHARGE TO POA-A2 (CFS)
1	14.52	16.85	0.37
2	19.78	22.61	0.47
10	39.98	44.53	0.74
25	56.19	61.96	0.94
100	88.33	96.33	1.31

### **TRACT A WATER QUANTITY**

To meet the NJDEP water quantity impact standards, it can be demonstrated that for stormwater leaving the site, post-construction runoff hydrographs for the 2-, 10- and 100-year storm events do not exceed, at any point in time, the pre-construction runoff hydrographs for the same storm events. This has been demonstrated in the appendix by overlaying the existing and proposed hydrographs and is summarized below.

#### SUMMARY OF EXISTING AND PROPOSED PEAK DISCHARGES (CFS)

POA	2-YEAR		10-YEAR		100-YEAR	
	EXISTING	PROPOSED	EXISTING	PROPOSED	EXISTING	PROPOSED
A1	22.77	22.61	44.70	44.53	96.51	96.33
A2	0.57	0.47	0.92	0.74	1.71	1.31

### **TRACT A WATER QUALITY**

NJDEP regulations only require that water quality treatment be provided for the proposed site runoff if an additional one-quarter acre of impervious surface is being proposed on a development site (N.J.A.C. 7:8-5.5(a)). The proposed project will not increase impervious surface and will reduce the impervious coverage and is therefore exempt from NJDEP and Municipal water quality requirements.



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The DRCC regulations require any proposed pavement area be treated to reduce the post-construction load of total suspended solids (TSS) in stormwater runoff generated from the water quality design storm by 80% of the anticipated load, expressed as an annual average. To meet this requirement Manufactured Treatment Devices (MTD) has been proposed to treat the runoff from the proposed driveways and parking areas. Runoff from roof areas is considered clean and does not require water quality treatment. These areas will be collected and discharged separately without treatment.

The Manufactured Treatment Devices specified are two (2) PerkFilter™ Box Culvert Vault by Oldcastle Infrastructure. These devices are certified by NJCAT to provide 80% TSS removal and include an internal bypass to pass larger storm events allowing them to be installed online without additional bypass structures. The proposed device, MTD-A1-1 uses 45-30” cartridges in a stacked 18” + 12” configuration each with a certified capacity of 30 gpm and 0.072 acres. This results in a capacity of 1,350 gpm or 3.01 cfs and 3.24 acres. The proposed device, MTD-A1-1 uses 46-30” cartridges in a stacked 18” + 12” configuration each with a certified capacity of 30 GPM and 0.072 acres. This results in a capacity of 1,380 gpm or 3.07 cfs and 3.31 acres. Two units are proposed to treat the onsite pavement areas. MTD-A1-1 has a tributary area of 1.402 acres and a peak Water Quality flow of 2.96 cfs. MTD-A2-2 has a tributary area of 1.218 acres and a peak Water Quality flow of 2.85 cfs.

Offsite area EA-70 passes through the proposed site and will be collected and treated by the proposed system. This drainage area includes 0.07 acres of existing untreated pavement that will now be treated. This 0.07 acres can be used as “credit” for potential untreated areas.



## WATER QUALITY TREATMENT BY DRAINAGE AREA SUMMARY

Proposed Drainage Area ID	Area of Pavement Surface (Acres)	Additional WQ Criteria	BMP Type	BMP TSS Removal Rate (%)
PA-5 & EA-10-OS	0.972	1.402 acre drainage area 2.96 cfs peak flow rate	MTD PerkFilter™ (12" + 18" Cartridge (max 0.07/cfs/0.072 acre/cartridge)	80% (NJDEP Certification)
PA-4	1.066	1.218 acre drainage area 2.85 cfs peak flow rate	MTD PerkFilter™ (12" + 18" Cartridge (max 0.07/cfs/0.072 acre/cartridge)	80% (NJDEP Certification)

MTD Certification, specifications and Water quality routing calculations are provided in Appendix.

### **TRACT A STORM SEWER DESIGN**

The storm sewer has been designed using Hydraflow Software by Autodesk. The proposed storm sewer was designed using the Rational Method with the Trenton Intensity-Duration-Frequency Table. A "C" coefficient of 0.9 was utilized for parking and landscaped areas contributing to the stormwater conveyance system with a minimum time of concentration of 10 minutes. A "C" value of 0.99 with a 6-minute time of concentration was assigned for roof leaders tying into the proposed drainage system. The storm sewer was designed to convey the 25-year storm frequency with a 25-year tailwater elevation of Rocky Brook which the existing 36" outlet pipe ties into. This elevation, 80, was selected from a conservative interpolation of the Rocky Brook Flood Profile, as studied by the Federal Emergency Management Agency located on page P109.

Three separate storm sewers have been proposed. Two will convey the proposed pavement runoff to the MTDs where it will be treated and discharged to the existing 36" RCP culvert discharging to the Brook. The third system will convey the runoff from roofs, lawn, and walkways which do not require treatment. This system will also connect to the existing 36" RCP. Storm sewer design calculations can be found in the Appendix.



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### **EXISTING 36" RCP CULVERT**

The existing onsite culvert was analyzed to ensure that it has capacity to convey the existing and proposed flows to the Brook. The majority of the culvert flow is from offsite storm sewers to the west of the site. While the proposed development will not increase the runoff from the site to the Brook however it will marginally increase flow through the 36" culvert with an existing 25-year peak flow of 58.51 cfs and a proposed peak flow of 61.46 cfs. The culvert was modeled using Hydraflow software using a peak flow of 95.60 cfs. The calculations demonstrate that existing culvert has sufficient capacity to pass the proposed peak flow and are included in the appendix.

### **TRACT B:**

#### **TRACT B STUDY AREAS**

The drainage areas utilized to analyze and calculate the stormwater quantity requirements for this development were established based on the proposed hydrologic limits of disturbance and the existing and proposed topography. The following is a listing of the existing and proposed points of analysis and drainage areas used in this report and a description of their location:

#### **Points of Analysis:**

POA-B1 – Rocky Brook

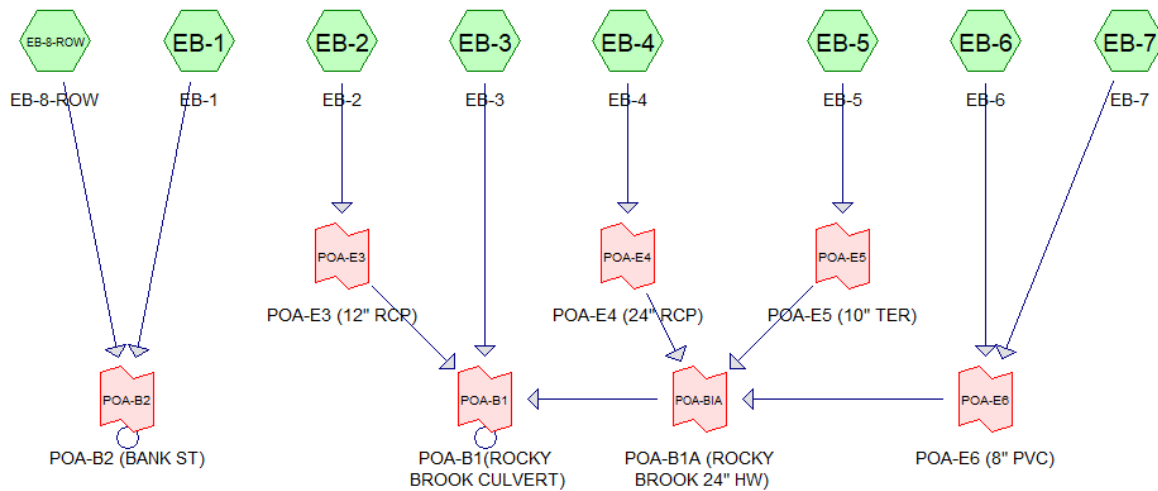
POA-B1A – 24" HW to Rocky Brook

POA-B2 – Bank Street





## Existing Areas:

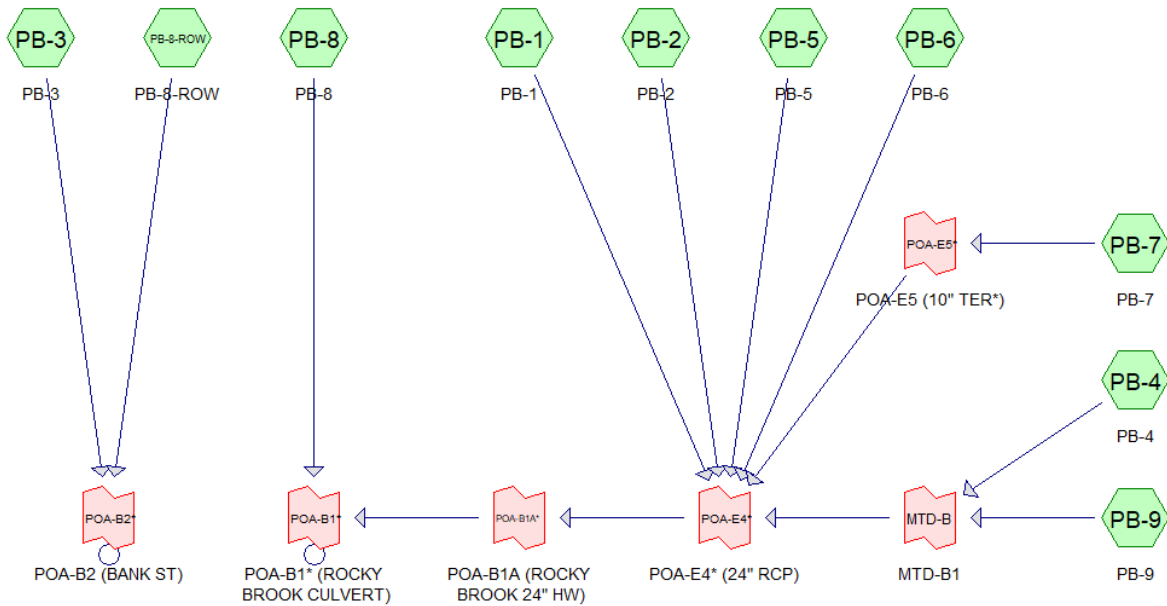


- Existing DA EB-1 – On-site drainage area consisting of roof and landscape area along Bank Street that runs off to the street where it flows to the existing storm sewer (POA-B2).
- Existing DA EB-2 – On-site drainage area consisting of roof and gravel area that sheet flows to Rocky Brook (POA-B1).
- Existing DA EB-3 – On-site drainage area consisting of roof and gravel area that sheet flows to Rocky Brook (POA-B1).
- Existing DA EB-4 – On-site drainage area consisting of roof areas, landscape areas, and surface parking area which collects to an existing on-site storm sewer and discharges via an existing 24" RCP headwall to the Rocky Brook (POA-B1A).
- Existing DA EB-5 – On-site drainage area consisting surface parking which collects to an existing on-site storm sewer and discharges via an existing 8" PVC pipe to the Rocky Brook (POA-B1).
- Existing DA EB-6 – On-site drainage area consisting surface parking and roofs which collects to an existing on-site storm sewer and discharges via an existing 8" PVC pipe to the Rocky Brook (POA-B1).
- Existing DA E7-OS – Off-site drainage area consisting of residential and commercial lots to the south of the site that sheet flows through the site and into the Brook.



The following is a listing of the proposed drainage areas used in this report and a description of their location:

**Proposed Areas:**



- Proposed DA PB-1 – On-site drainage area consisting of landscape and patio area that is collected by the proposed “clean” storm sewer and discharged untreated to the existing 24” culvert (POA-B1 A).
- Proposed DA PB-2 – On-site drainage area consisting of roof area of the proposed buildings. This area is collected by the proposed “clean” storm sewer and discharged untreated to the existing 24” culvert (POA-B1 A).
- Proposed DA PB-3 – On-site drainage area consisting of landscaping and sidewalks sheet flowing and collected by the Bank Street storm sewer (POA-B2).
- Proposed DA PB-4 – On-site drainage area consisting of asphalt areas and sidewalks. This area is collected by the proposed storm sewer, treated for 80% TSS removal by MTD-B-1 and discharged to the existing 24” culvert (POA-B1).
- Proposed DA PB-5 – On-site drainage area consisting of roof area of the proposed buildings. This area is collected by the proposed “clean” storm sewer and discharged untreated to the existing 24” culvert (POA-B1 A).



- Proposed DA PB-6 – On-site and off-site drainage area consisting of landscape, sidewalk, and roof areas that is collected by the proposed “clean” storm sewer and discharged untreated to the existing 24” culvert (POA-B1 A).
- Proposed DA PB-7 – On-site drainage area consisting of roof area of the existing firehouse building. This area is to be collected by the existing storm system and discharged via the 8” pvc. (POA-B1 A).
- Existing DA PB-8-ROW – Off-site drainage area consisting of plantings, sidewalks and roadway present within the right-of-way. Stormwater collects at POA-2 within the existing storm system in Bank Street ties into the right-of-way storm system.
- Proposed DA PB-9 – On-site drainage area consisting of roof area and structured parking. This area is collected by the proposed storm sewer, treated for 80% TSS removal by MTD-B-1 and discharged to the existing 24” culvert (POA-B1).

### **TRACT B EXISTING CONDITIONS**

To calculate the allowable outflow from the proposed site, the existing drainage areas were analyzed to two individual points of analysis (POA). POA-1B is the on-site Rocky Brook. For the purpose of analyzing the capacity of the existing 24” RCP between the drainage ditch and the Brook an intermediate analysis point POA -1B A was included. POA #2 is the Bank Street storm sewer.

The existing peak flows to the point of analysis are summarized in the following tables:

STORM (YEAR)	DISCHARGE TO POA-B1 A (CFS)	DISCHARGE TO POA-B1 (CFS)	DISCHARGE TO POA-B2 (CFS)
1	3.06	7.44	0.80
2	3.79	9.31	0.99
10	5.98	14.96	1.57
25	7.50	18.86	1.97
100	10.26	25.96	2.70

The majority of the site runoff discharges to POA 1 (Rocky Brook) with portion of the existing site roofs discharging to Bank Street. Most of the existing onsite runoff sheet flows directly into the Brook and a portion flows to the drainage ditch.



## **TRACT B PROPOSED CONDITIONS**

The proposed site will maintain the existing drainage pattern with the majority of the site discharging to the Brook and a portion of the existing building continuing to drain to Bank Street. Under proposed conditions site storm sewers will be connected to the 24” RCP discharging to the Brook rather than some flow sheet flowing.

The proposed peak flows to the point of analysis are summarized in the following tables:

STORM (YEAR)	DISCHARGE TO POA-B1 A (CFS)	DISCHARGE TO POA-B1 (CFS)	DISCHARGE TO POA-B2 (CFS)
1	6.91	7.42	0.56
2	8.46	9.25	0.71
10	13.15	14.85	1.17
25	16.38	18.77	1.49
100	22.27	25.95	2.07

## **TRACT B WATER QUANTITY**

To meet the NJDEP water quantity impact standards, it can be demonstrated that for stormwater leaving the site, post-construction runoff hydrographs for the 2-, 10- and 100-year storm events do not exceed, at any point in time, the pre-construction runoff hydrographs for the same storm events. This has been demonstrated in the appendix by overlaying the existing and proposed hydrographs and is summarized below.

### SUMMARY OF EXISTING AND PROPOSED PEAK DISCHARGES (CFS)

POA	2-YEAR		10-YEAR		100-YEAR	
	EXISTING	PROPOSED	EXISTING	PROPOSED	EXISTING	PROPOSED
B1	9.31	9.25	14.96	14.85	25.96	25.95
B2	0.99	0.71	1.57	1.17	2.70	2.07

## **TRACT B WATER QUALITY**

The Manufactured Treatment Devices specified is a PerkFilter™ Box Culvert Vault by Oldcastle Infrastructure. These devices are certified by NJCAT to provide 80% TSS removal and include an internal bypass to pass larger storm events allowing them to be installed online without additional bypass structures. The proposed device, MTD-B1-2 uses 57-30” cartridges in a stacked 18” + 12” configuration each with a certified capacity of 30 gpm and 0.072 acres. This results in



a capacity of 1,710 gpm or 3.81 cfs and 4.10 acres. One unit is proposed to treat the on-site pavement areas. MTD-B1 has a tributary area of 1.22 acres and a peak Water Quality flow of 3.57 cfs.

#### WATER QUALITY TREATMENT BY DRAINAGE AREA SUMMARY

Proposed Drainage Area ID	Area of Pavement Surface (Acres)	Additional WQ Criteria	BMP Type	BMP TSS Removal Rate (%)
PB-4 & PB-9	1.24	1.22 acre drainage area 3.57 cfs peak flow rate	MTD PerkFilter™ 57 x 30” Cartridge (max 0.02/cfs/0.12 acre/cartridge)	80% (NJDEP Certification)

MTD Certification, specifications and Water quality routing calculations are provided in Appendix.

#### **TRACT B STORM SEWER DESIGN**

The storm sewer has been designed using Hydraflow Software by Autodesk. The proposed storm sewer was designed using the Rational Method with the Trenton Intensity-Duration-Frequency Table. A “C” coefficient of 0.9 was utilized for parking and landscaped areas contributing to the stormwater conveyance system with a minimum time of concentration of 10 minutes. A “C” value of 0.99 with a 6-minute time of concentration was assigned for roof leaders tying into the proposed drainage system.

Separate storm sewers have been proposed. One will convey the proposed pavement runoff to the MTDs where it will be treated and discharged to the existing 24” RCP culvert discharging to the Brook. The other system will convey the runoff from roofs, lawn, and walkways which do not require treatment. This system will also connect to the existing 24” RCP. Storm sewer design calculations can be found in the Appendix.

#### **EXISTING 24” RCP CULVERT**

The existing onsite culvert was analyzed to ensure that it has capacity to convey the existing and proposed flows to the Brook. While the proposed development will not increase the runoff from



the site to the Brook however it will marginally increase flow through the 24” RCP culvert with an existing 25-year peak flow of 58.51 cfs and a proposed peak flow of 61.46 cfs. The culvert was modeled using Hydraflow software using a peak flow of 95.60 cfs. The calculations demonstrate that existing culvert has sufficient capacity to pass the proposed peak flow and are included in the appendix.

## **TRACT C:**

### **TRACT C STUDY AREAS**

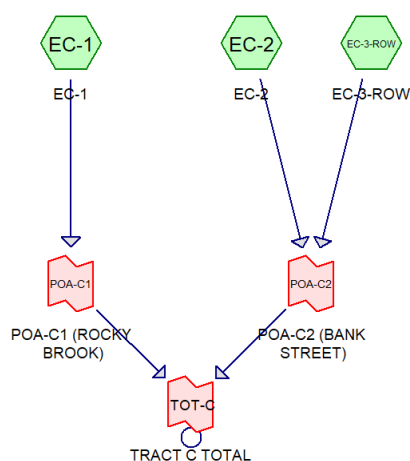
The drainage areas utilized to analyze and calculate the stormwater quantity requirements for this development were established based on the proposed hydrologic limits of disturbance and the existing and proposed topography. The following is a listing of the existing and proposed points of analysis and drainage areas used in this report and a description of their location:

#### **Points of Analysis:**

POA-C1 – Rocky Brook

POA-C2 – Bank Street

#### **Existing Areas:**

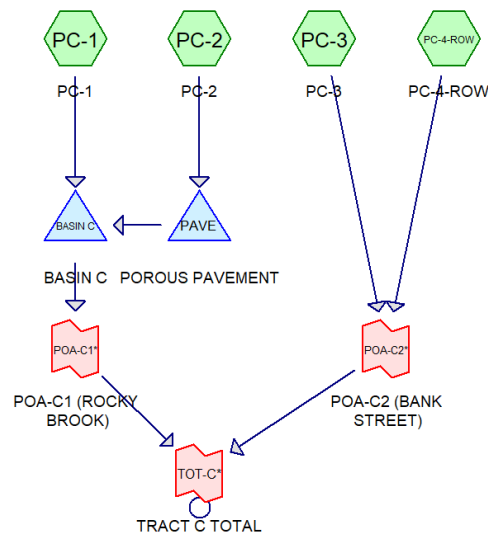




- Existing DA EC-1 – On-site drainage area consisting of a single-family home, gravel driveways and mixed plantings with runoff sheet flowing to POA-3 (Rocky Brook) to the Northeast.
- Existing DA EC-2 – On-site drainage area consisting of a gravel driveway and mixed plantings with drainage sheet flowing Southeast toward Bank Street collected by a storm system within the ROW storm system and discharging into POA 3.
- Existing DA EC-ROW – Off-site drainage area consisting of plantings, sidewalks and roadway present within the right-of-way. Stormwater collects at POA-2 within the existing storm system in Bank Street.

The following is a listing of the proposed drainage areas used in this report and a description of their location:

**Proposed Areas:**



- Proposed DA PC-1 – On-site drainage area consisting of roof areas draining via roof leaders directly to the on-site ADS system and discharging to POA-C1 (Rocky Brook).
- Proposed DA PC-2 – On-site drainage area consisting of landscaping and pavement. This area is treated for 80% TSS removal by the 18” deep porous pavement



system before collecting into the 8” underdrain and discharging into the proposed ADS system with an outfall into POA-3.

Proposed DA PC-3 – On-site drainage area consisting of landscape and sidewalks along the Bank Street frontage collecting and draining into the existing stormwater conveyance system within Bank Street (POA-C2).

Proposed DA PC-4-ROW – Off-site drainage area along Bank Street present within the right-of-way being modified as part of this project. Stormwater collects within the existing storm system within Bank Street (POA-C2).

### **TRACT C EXISTING CONDITIONS**

To calculate the allowable outflow from the proposed site, the existing drainage areas were analyzed to two individual points of analysis (POA). The majority of the site runs off to POA-C1 which is the onsite Rocky Brook that flows North. Portion of the existing driveway run off to POA-C2 which is the discharge point located within Bank Street conveyed via Bank Street’s existing stormwater system.

The existing peak flows to the point of analysis are summarized in the following tables:

STORM (YEAR)	DISCHARGE TO POA-C1 (CFS)	DISCHARGE TO POA-C2 (CFS)
1	0.15	0.15
2	0.18	0.22
10	0.31	0.43
25	0.49	0.60
100	0.92	0.94





### **TRACT C PROPOSED CONDITIONS**

The proposed site will maintain the existing drainage pattern with the majority of the site discharging to the Brook and a portion of the site continuing to drain to Bank Street. The proposed peak flows to the point of analysis are summarized in the following tables:

STORM (YEAR)	DISCHARGE TO POA-C1 (CFS)	DISCHARGE TO POA-C2 (CFS)
1	0.08	0.14
2	0.09	0.17
10	0.20	0.29
25	0.35	0.39
100	0.68	0.58

### **TRACT C WATER QUANTITY**

To meet the NJDEP water quantity impact standards, it can be demonstrated that for stormwater leaving the site at POA-C1, the post-development peak runoff rate for the 2-year storm event is 50%, 10-year storm is 75% and 100-year storm is 80% of the pre-development peak runoff rate from the developed portion of the site.

#### POA-C1

STORM (YEAR)	DISCHARGE TO POA C1 (CFS) (REQUIRING REDUCTIONS)	ALLOWABLE DISCHARGE (PERCENT)	ALLOWABLE DISCHARGE (CFS)	PROPOSED DISCHARGE (CFS)
2	0.18	50%	0.09	0.09
10	0.31	75%	0.23	0.20
25	0.49	-	0.49	0.35
100	0.92	80%	0.74	0.68

To meet the NJDEP water quantity impact standards for POA C2, it can be demonstrated that for stormwater leaving the site, post-construction runoff hydrographs for the 2-, 10- and 100-year storm events do not exceed, at any point in time, the pre-construction runoff hydrographs for the same storm events. This has been demonstrated in the appendix by overlaying the existing and proposed hydrographs and is summarized below.

### **STORMWATER MANAGEMENT REPORT**



## SUMMARY OF EXISTING AND PROPOSED PEAK DISCHARGES (CFS)

POA	2-YEAR		10-YEAR		100-YEAR	
	EXISTING	PROPOSED	EXISTING	PROPOSED	EXISTING	PROPOSED
A2	0.22	0.17	0.43	0.29	0.94	0.58

It is shown that Tract C meets water quantity standards for the 2-, 10- and 100-year storm events.

### **TRACT C WATER QUALITY**

NJDEP regulations require that water quality treatment be provided for the proposed site runoff. The water quality standards require that stormwater management measures be designed to reduce the post-construction load of total suspended solids (TSS) in stormwater runoff generated from the water quality design storm (1.25 inch/2-hour) by 80% of the anticipated load from the developed site, expressed as an annual average.

The parking stalls located within Tract C consist of an 18" deep porous surface that is under-drained via an 8" perforated HDPE to treat and convey the water to the on-site ADS stormwater detention system. Per Chapter 9.7 of the New Jersey Best Management Practices Manual, a pervious paving system consisting of a porous surface over a storage bed of stone provides the necessary 80% TSS removal. The loading rate of the asphalt area requiring treatment compared to the porous pavement area provides a 2.9:1 ratio. The porous pavement has been routed for the water quality storm to demonstrate capacity in the stone bed.

### WATER QUALITY TREATMENT BY DRAINAGE AREA SUMMARY

Proposed Drainage Area ID	Area of Pavement Surface (SF)	Additional WQ Criteria	BMP Type	BMP TSS Removal Rate (%)
PC-2	6,752	5,053 SF Non-Porous 2.97:1 loading ratio	1,699 SF Porous Pavement with 18" storage bed (0.023 acre-ft)	80%

### **TRACT C STORM SEWER DESIGN**

The storm sewer has been designed using Hydraflow Software by Autodesk. The proposed storm sewer was designed using the Rational Method with the Trenton Intensity-Duration-Frequency



Table. A “C” coefficient of 0.9 was utilized for parking and landscaped areas contributing to the stormwater conveyance system with a minimum time of concentration of 10 minutes. A “C” value of 0.99 with a 6-minute time of concentration was assigned for roof leaders tying into the basin. The storm sewer was designed to convey the 25-year storm frequency with a 25-year tailwater elevation assigned to where the proposed system ties into the proposed ADS storage system.

### **GROUNDWATER RECHARGE**

Groundwater recharge is not required or proposed for the following reasons:

- The proposed project is a redevelopment and is located in a Designated Center which is classified as an urban redevelopment area. N.J.A.C. 7:8-5.4(a)2.ii states that groundwater recharge requirements do not apply to projects within the urban redevelopment area.
- Tracts A of the project is located on an existing industrial site which contains contaminated groundwater with a CEA. N.J.A.C. 7:8-5.4(a)2.iii(1) states that stormwater should not be recharged where recharge would be inconsistent with a remedial action work plan.
- Tracts A and B are almost entirely impervious under existing conditions with minimal areas where recharge may have occurred. The soil test pits also indicate shallow groundwater which would not allow proposed recharge.
- The geotechnical investigations in Tract C have identified a lack of permeability in the soils.

### **NON-STRUCTURAL STORMWATER MANAGEMENT STRATEGIES**

Several non-structural and structural stormwater management strategies have been implemented into the design of the site to reduce the impacts of development on the surrounding environment and ecological system.

The following list demonstrates non-structural strategies employed into the site:

- The project layout and grading was designed to minimize clearing of existing woods and native vegetation.



- 
- Soil erosion and sediment control measures will be implemented throughout the site during construction activity.
  - Impervious surfaces have been minimized by utilizing minimum roadway and driveway widths.
  - Upon final grading, measures may be implemented to either till or scarify the top layer of soil to minimize soil compaction.
  - Low maintenance landscaped areas are proposed throughout the development to minimize the use of lawns, fertilizers, and pesticides. Further, this site will be professionally maintained helping to ensure that fertilizer and pesticides that are used will be correctly and appropriately applied.
  - Preventative source controls at inlets and outlet structure help to contain floatable debris and promote public awareness.
  - Existing wetland features are being maintained.

### **SOIL EROSION AND SEDIMENT CONTROL**

In accordance with the Soil Erosion and Sediment Control Act, soil erosion measures were incorporated into the design and graphically depicted on the Soil Erosion and Sediment Control Plans. These measures include, but are not limited to:

- Sediment Barriers and Silt Fences
- Conduit Outlet Protection
- Stabilized Construction Access
- Storm Sewer Inlet Protection
- Temporary and Permanent Stabilization

The proposed onsite storm sewers are connecting to existing 24” and 36” RCP culverts that discharge to the Rocky Brook. The existing pipe discharge is an existing aged condition which constitutes a stable discharge. The proposed offsite peak flows are less than the existing flows and are contained with the Brook.



---

## **CONCLUSION**

The proposed development will maintain the existing drainage patterns. The stormwater design is in compliance with the Borough, NJDEP, DRCC and Soil Conservation District regulations with regard to stormwater quantity, quality and groundwater recharge requirements.

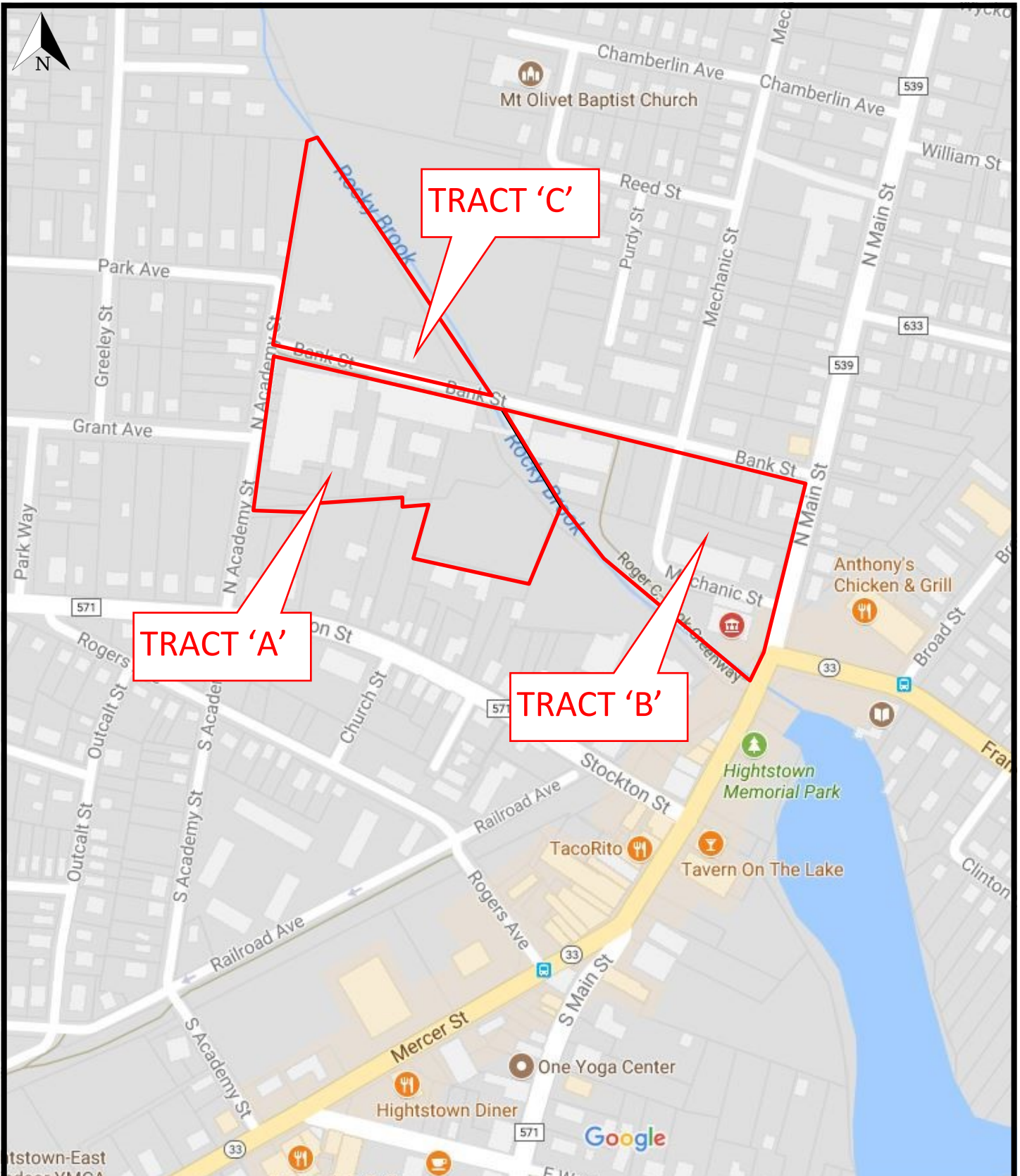
\\HQFAS1\General\Projects\2016\16001094B\Reports\Drainage\SWM\200814\_ SWM Report.docx



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## **APPENDIX A**

TAX MAP  
USGS MAP  
SOILS MAP  
LOCATION MAP  
FEMA MAP  
AERIAL MAP  
DRCC MAP



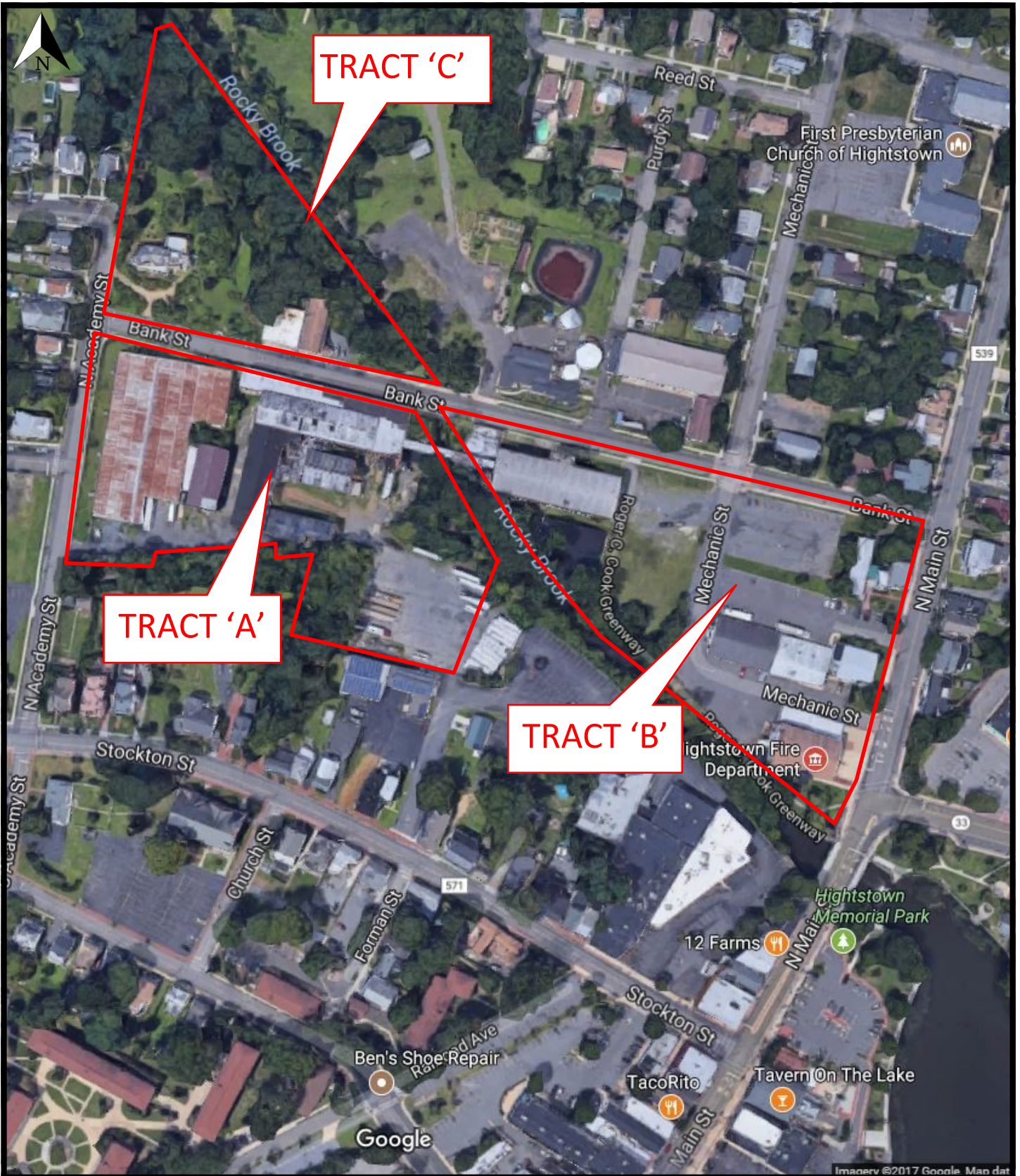
**Corporate Headquarters**  
 331 Newman Springs Road  
 Suite 203  
 Red Bank, NJ 07701  
 T: 732.383.1950  
 F: 732.383.1984  
[www.maserconsulting.com](http://www.maserconsulting.com)

**Location Map**  
**Borough of Hightstown**  
 Mercer County, New Jersey  
 Image source:  
 Google Earth

Scale: 1"=200'

Date: May 2020

MC Project No. 16001094B



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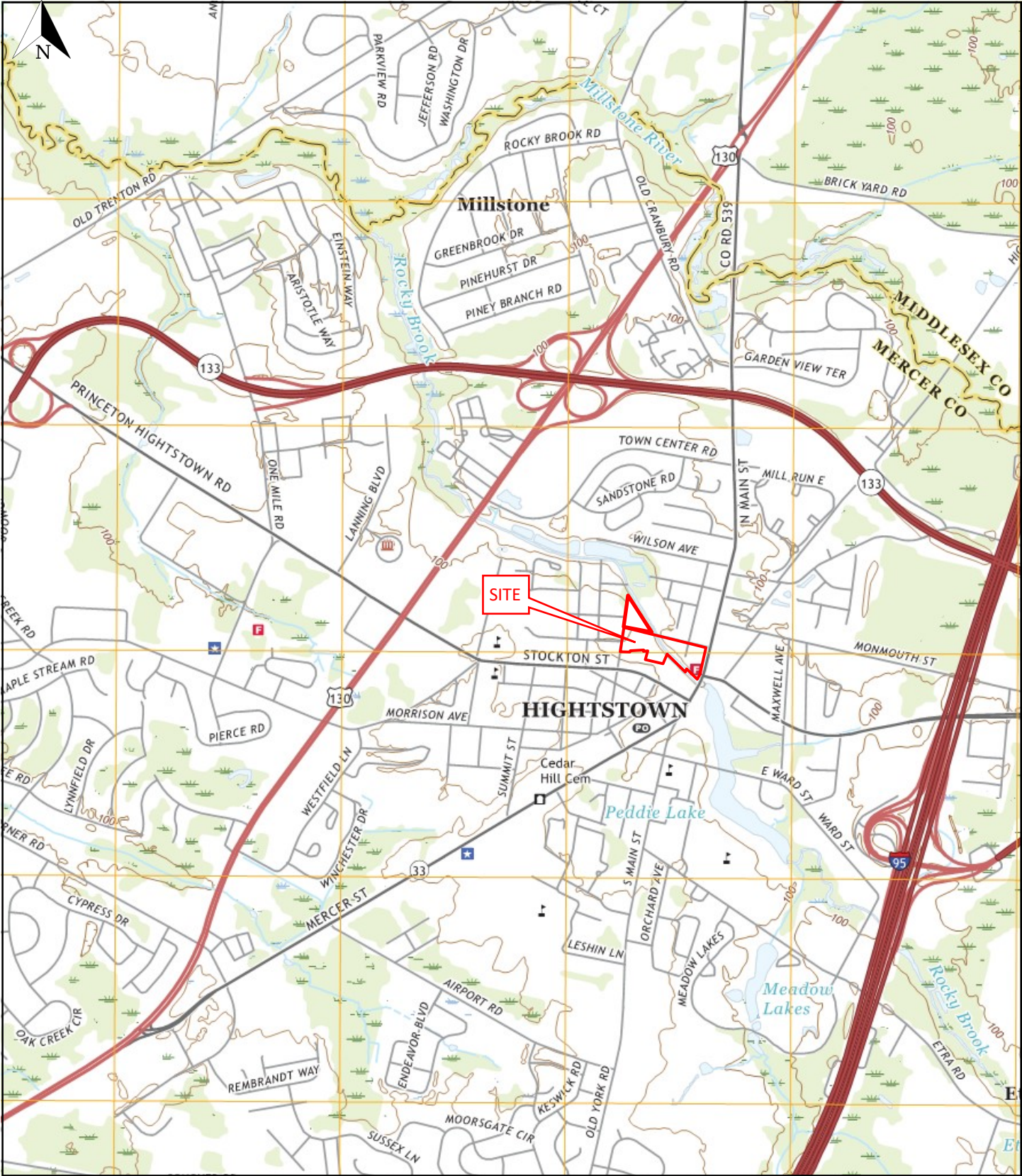
**Aerial Map**  
**Borough of Hightstown**  
 Mercer County, New Jersey  
 Image source:  
 Google Earth

**Scale: 1"=200'**

**Date: May 2020**

**MC Project No. 16001094B**





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**USGS Hightstown**  
 Mercer County, New Jersey  
 Image source:  
 United State Geological Survey  
 Effective Date 2019

**Scale: 1"=2000'**

**Date: May 2020**

**MC Project No. 16001094A**



540120 540190 540260 540330 540400 540470 540540 540610 540680

Map Scale: 1:3,150 if printed on A landscape (11" x 8.5") sheet.



Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
FodC	Fort Mott loamy sand, 5 to 10 percent slopes	A	2.7	24.7%
HcuAt	Hatboro-Codorus complex, 0 to 3 percent slopes, frequently flooded	B/D	0.0	0.0%
OthA	Othello silt loams, 0 to 2 percent slopes, northern coastal plain	C/D	6.9	62.9%
SacB	Sassafras sandy loam, 2 to 5 percent slopes, Northern Coastal Plain	B	0.6	5.7%
SacC	Sassafras sandy loam, 5 to 10 percent slopes, Northern Coastal Plain	B	0.7	6.7%
<b>Totals for Area of Interest</b>			<b>11.0</b>	<b>100.0%</b>



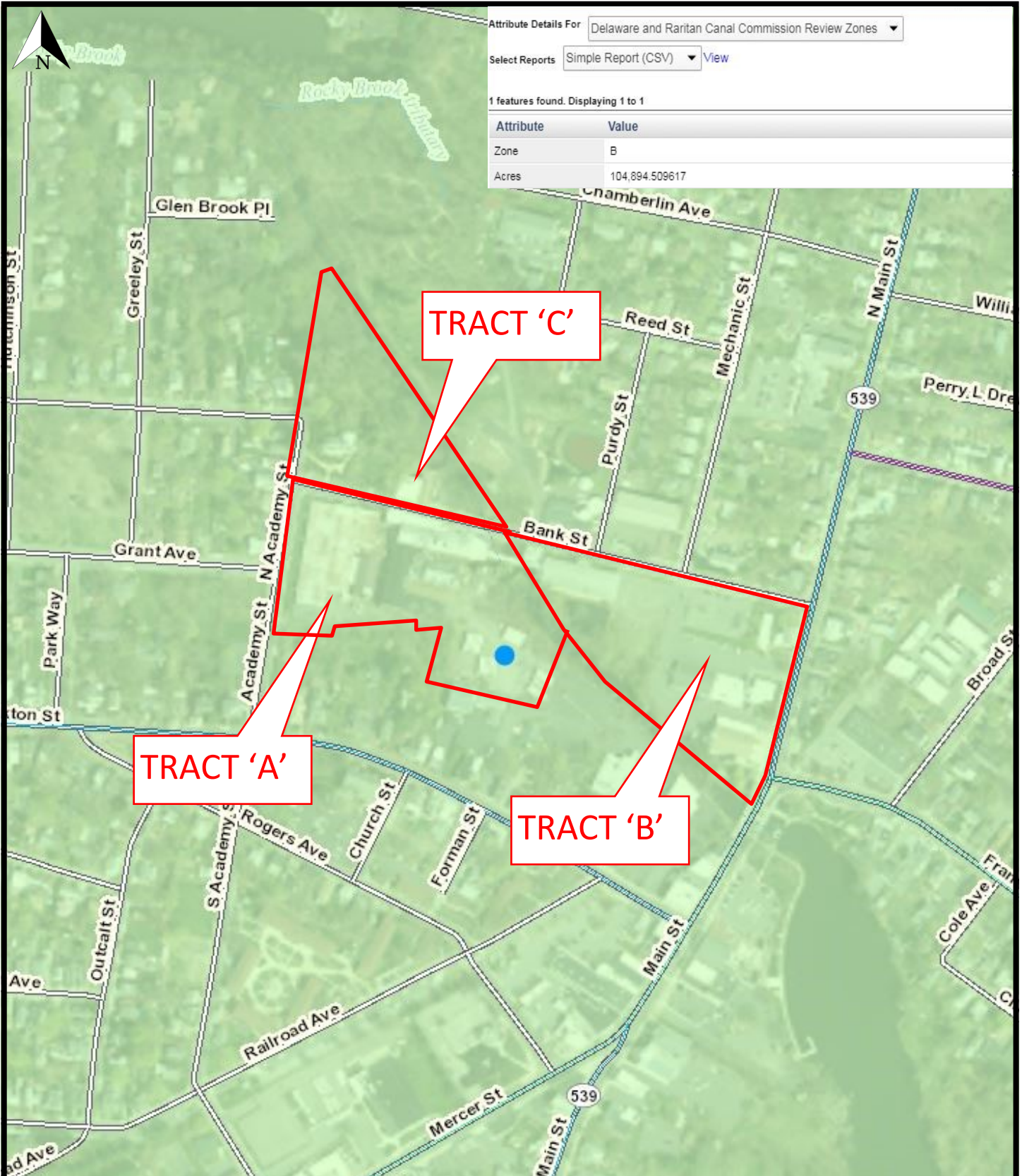
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**Hydrologic Soil Groups**  
**Borough of Hightstown**  
 Mercer County, New Jersey  
 Image source:  
 Web Soil Survey

**Scale: As Shown**

**Date: May 2020**

**MC Project No. 16001094B**



Attribute Details For Delaware and Raritan Canal Commission Review Zones

Select Reports Simple Report (CSV) View

1 features found. Displaying 1 to 1

Attribute	Value
Zone	B
Acres	104,894.509617

TRACT 'C'

TRACT 'A'

TRACT 'B'



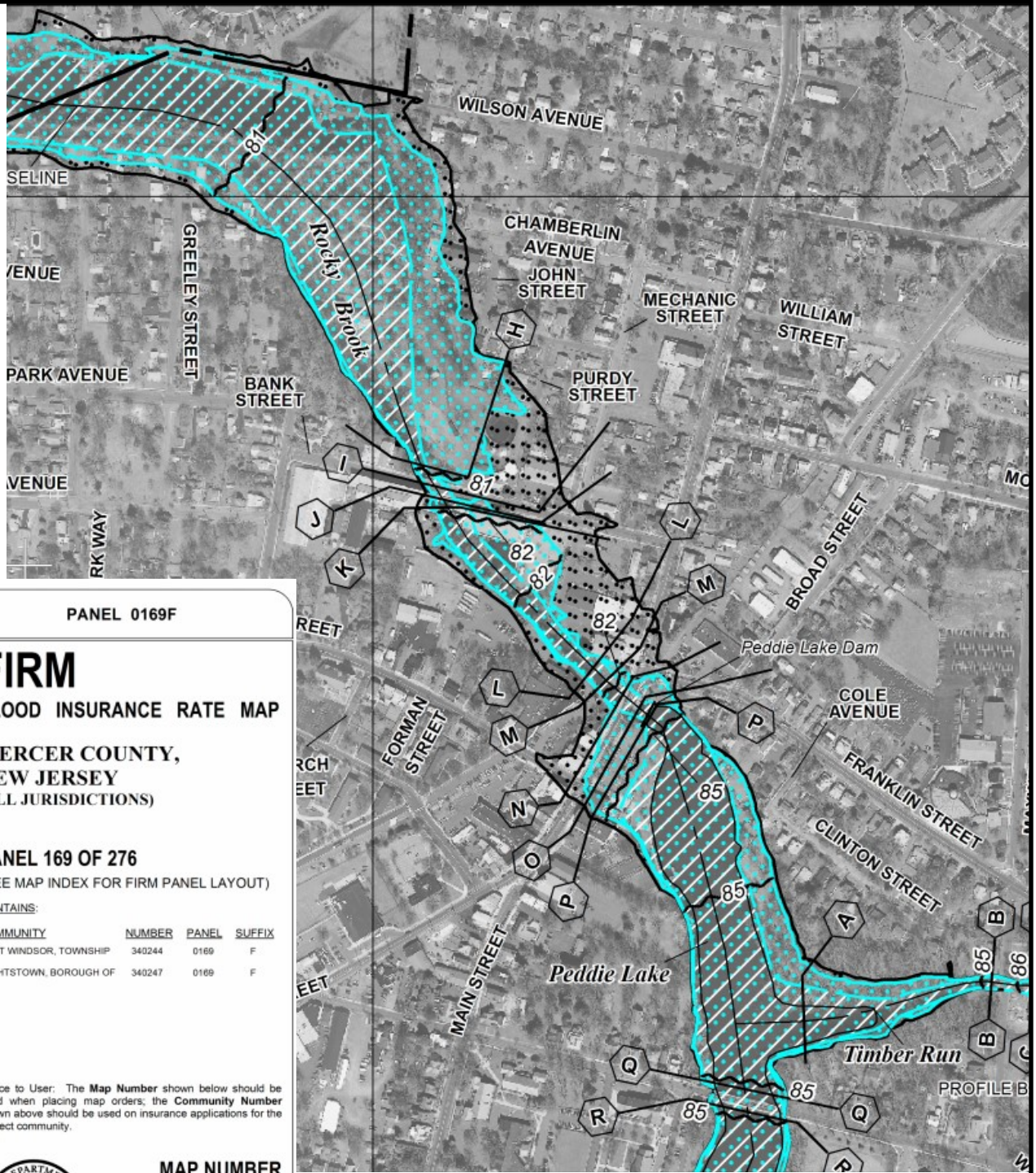
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**DRCC MAP**  
**Borough of Hightstown**  
 Mercer County, New Jersey  
 Image source:  
 NJ-Geoweb

Scale: NTS

Date: May 2020

MC Project No. 16001094B



NFIP  
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0169F

**FIRM**  
FLOOD INSURANCE RATE MAP  
MERCER COUNTY,  
NEW JERSEY  
(ALL JURISDICTIONS)

PANEL 169 OF 276  
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
EAST WINDSOR, TOWNSHIP	340244	0169	F
OF HIGHTSTOWN, BOROUGH OF	340247	0169	F

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.



MAP NUMBER  
34021C0169F

EFFECTIVE DATE  
JULY 20, 2016

Federal Emergency Management Agency



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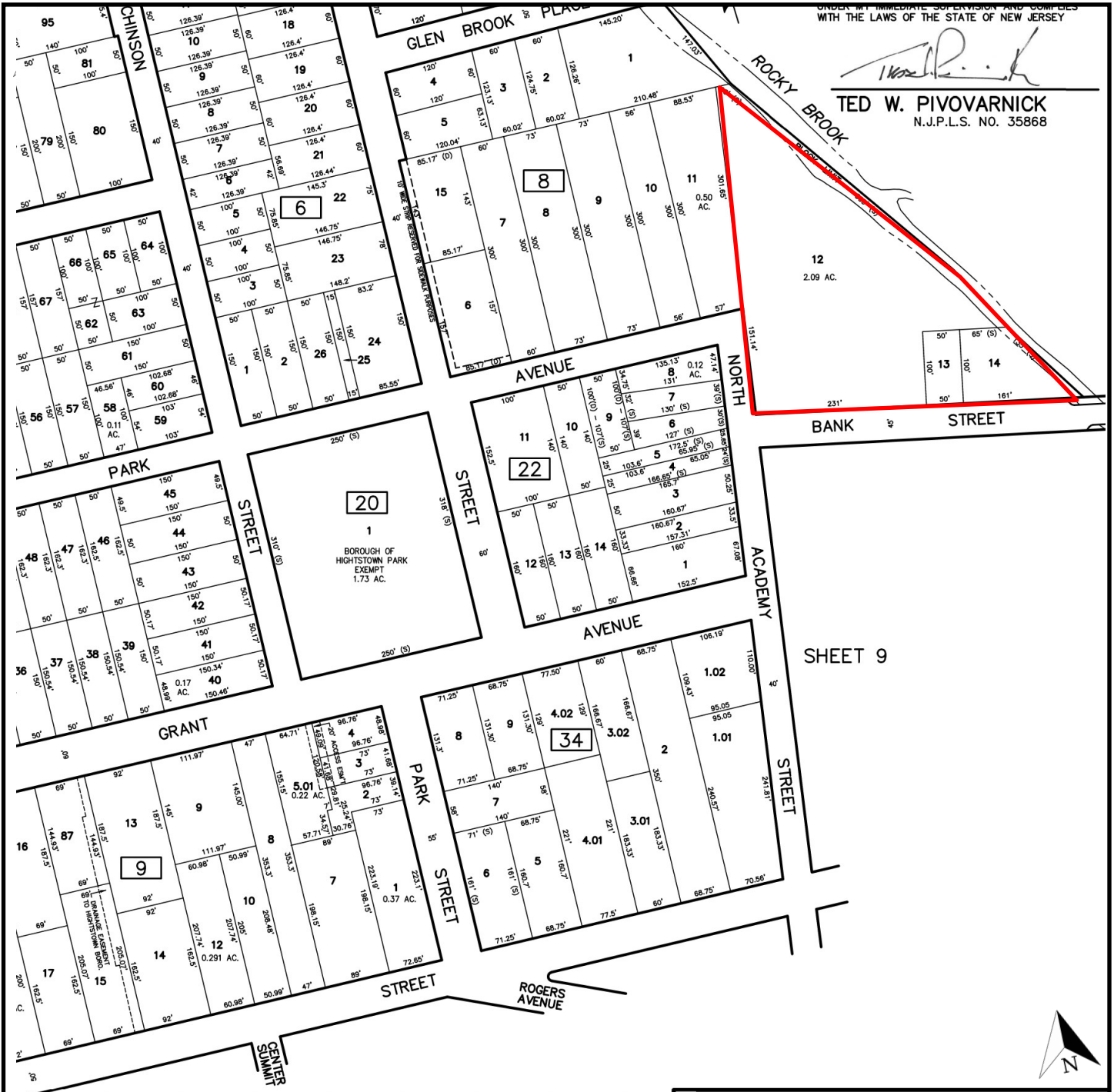
FEMA FLOOD MAP  
Borough of Hightstown  
Mercer County, New Jersey  
Image source:  
FEMA Flood Maps  
Effective July, 20 2016

Scale: 1" = 500'

Date: May 2020

MC Project No. 16001094B

*Ted W. Pivovarnick*  
**TED W. PIVOVARNICK**  
N.J.P.L.S. NO. 35868



SHEET 9

SHEET 3

NEW JERSEY DEPARTMENT OF THE TREASURY  
DIVISION OF TAXATION  
PROPERTY ADMINISTRATION  
APPROVED AS A TAX MAP PURSUANT TO THE AUTHORITY OF  
N.J.S.A. 54:1-15 & 54:69-1  
FOR THE DIRECTOR, DIVISION OF TAXATION  
*Santo C. DiDionato* C.T.A.  
THOMAS A. REAGAN, CHIEF, LOCAL PROPERTY, FIELD ASSISTANCE  
*Santo C. DiDionato* C.T.A.  
SANTO C. DIDIONATO, SUPERVISING FIELD REPRESENTATIVE  
DATE: JUN 29 2007 SERIAL NO. 911

NEW JERSEY DEPARTMENT OF THE TREASURY  
DIVISION OF TAXATION  
PUBLIC UTILITY TAX BUREAU  
APPROVED AS A TAX MAP PURSUANT TO THE  
PROVISIONS OF CHAPTER 175, LAWS OF 1913, ETC.  
FOR THE DIRECTOR, DIVISION OF TAXATION  
*J.A. Omer*  
DATE: NOV 8 1965 SERIAL NO. 437

**TAX MAP**  
**BOROUGH OF HIGHTSTOWN**  
MERCER COUNTY, NEW JERSEY  
SCALE: 1" = 100' OCTOBER 1965  
**VAN NOTE - HARVEY ASSOCIATES**  
CONSULTING ENGINEERS & LAND SURVEYORS  
234 NASSAU STREET,



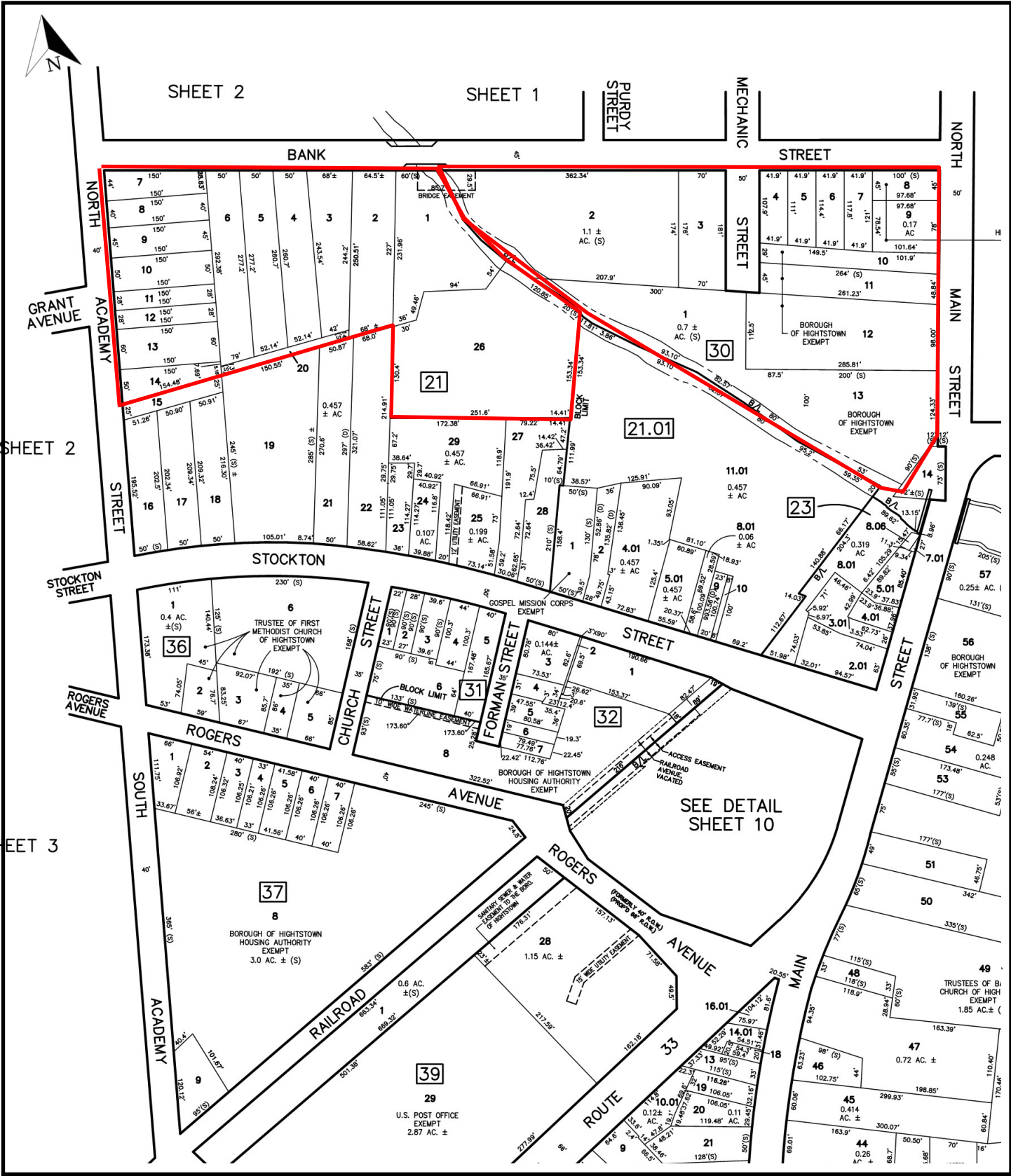
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Suite 203  
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**Tax Map**  
**Borough of Hightstown**  
Mercer County, New Jersey  
Sheet 2, Effective 12/31/19

Scale: 1" = 200'

Date: May 2020

MC Project No. 16001094B



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Tax Map  
 Borough of Hightstown  
 Mercer County, New Jersey  
 Sheet 9, Effective 12/31/19

Scale: 1" = 200'

Date: May 2020

MC Project No. 16001094B

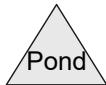
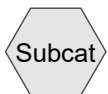
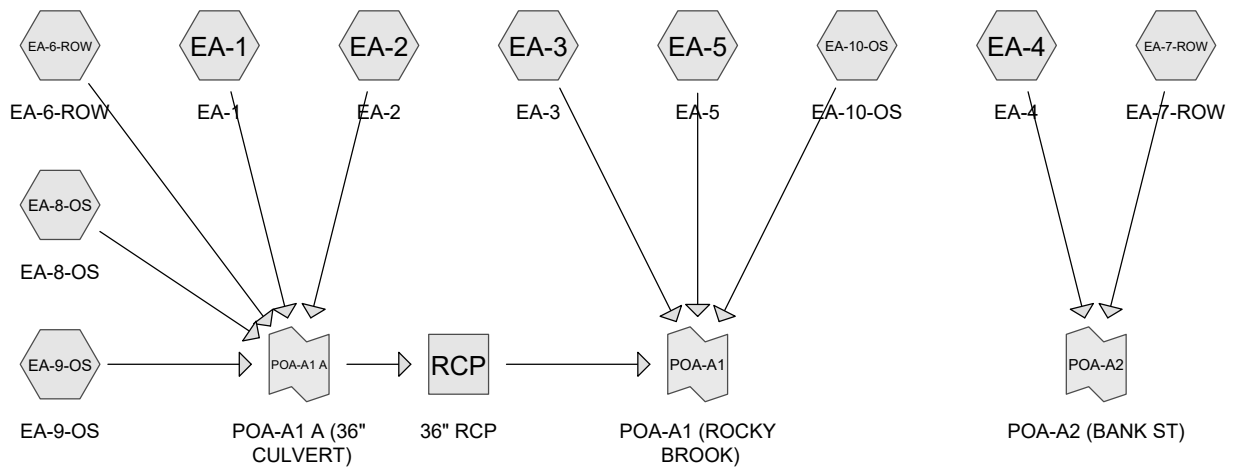


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## **APPENDIX B**

### EXISTING CONDITIONS ANALYSIS

**TRACT A EXISTING**



**Routing Diagram for 200811\_Model**  
 Prepared by Maser Consulting, Printed 8/12/2020  
 HydroCAD® 10.10-3a s/n 10901 © 2020 HydroCAD Software Solutions LLC



## **200811\_Model**

Prepared by Maser Consulting

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Printed 8/12/2020

Page 2

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### **Project Notes**

Rainfall events imported from "200330\_Analysis.hcp"

## 200811\_Model

Prepared by Maser Consulting

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Printed 8/12/2020

Page 3

### Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-MER 1YR	NRCC 24-hr	C	Default	24.00	1	2.74	2
2	2-MER 2YR	NRCC 24-hr	C	Default	24.00	1	3.31	2
3	3-MER 10YR	NRCC 24-hr	C	Default	24.00	1	5.02	2
4	4-MER 25YR	NRCC 24-hr	C	Default	24.00	1	6.20	2
5	5-MER 100YR	NRCC 24-hr	C	Default	24.00	1	8.35	2
6	NJDEP WQ	NJ DEP 2-hr		Default	2.00	1	1.25	2

**Area Listing (selected nodes)**

Area (acres)	CN	Description (subcatchment-numbers)
46.420	72	1/3 acre lots, 30% imp, HSG B (EA-8-OS)
0.072	39	>75% Grass cover, Good, HSG A (EA-1, EA-4, EA-6-ROW, EA-7-ROW)
0.991	61	>75% Grass cover, Good, HSG B (EA-1, EA-4, EA-6-ROW, EA-7-ROW, EA-9-OS)
0.220	74	>75% Grass cover, Good, HSG C (EA-10-OS)
0.448	80	>75% Grass cover, Good, HSG D (EA-7-ROW, EA-9-OS)
0.022	30	Brush, Good, HSG A (EA-2, EA-4)
0.021	48	Brush, Good, HSG B (EA-4)
0.532	73	Brush, Good, HSG D (EA-2, EA-3, EA-9-OS)
0.015	76	Gravel roads, HSG A (EA-2)
0.010	91	Gravel roads, HSG D (EA-1)
2.010	98	Paved parking (EA-2, EA-3)
0.158	98	Paved roads w/curbs & sewers, HSG D (EA-6-ROW, EA-7-ROW)
1.331	98	Roofs (EA-1, EA-2, EA-3)
0.540	98	Roofs, HSG C (EA-10-OS, EA-4, EA-9-OS)
0.090	98	Unconnected pavement (EA-1, EA-2, EA-3)
0.210	98	Unconnected pavement, HSG C (EA-10-OS, EA-9-OS)
0.140	98	Unconnected roofs, HSG D (EA-5)
0.270	58	Woods/grass comb., Good, HSG B (EA-9-OS)
0.040	72	Woods/grass comb., Good, HSG C (EA-10-OS)
0.050	79	Woods/grass comb., Good, HSG D (EA-9-OS)
<b>53.590</b>	<b>74</b>	<b>TOTAL AREA</b>

## 200811\_Model

Prepared by Maser Consulting

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Printed 8/12/2020

Page 5

### Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.109	HSG A	EA-1, EA-2, EA-4, EA-6-ROW, EA-7-ROW
47.702	HSG B	EA-1, EA-4, EA-6-ROW, EA-7-ROW, EA-8-OS, EA-9-OS
1.010	HSG C	EA-10-OS, EA-4, EA-9-OS
1.338	HSG D	EA-1, EA-2, EA-3, EA-5, EA-6-ROW, EA-7-ROW, EA-9-OS
3.431	Other	EA-1, EA-2, EA-3
<b>53.590</b>		<b>TOTAL AREA</b>

**200811\_Model**

Prepared by Maser Consulting

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Printed 8/12/2020

Page 6

**Ground Covers (selected nodes)**

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	46.420	0.000	0.000	0.000	46.420	1/3 acre lots, 30% imp	EA-8-O S
0.072	0.991	0.220	0.448	0.000	1.731	>75% Grass cover, Good	EA-1, EA-10-OS, EA-4, EA-6-R OW,  EA-7-R OW,  EA-9-O S
0.022	0.021	0.000	0.532	0.000	0.575	Brush, Good	EA-2, EA-3, EA-4, EA-9-O S
0.015	0.000	0.000	0.010	0.000	0.025	Gravel roads	EA-1, EA-2
0.000	0.000	0.000	0.000	2.010	2.010	Paved parking	EA-2, EA-3
0.000	0.000	0.000	0.158	0.000	0.158	Paved roads w/curbs & sewers	EA-6-R OW,  EA-7-R OW

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**Ground Covers (selected nodes) (continued)**

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.540	0.000	1.331	1.871	Roofs	EA-1, EA-10-OS, EA-2, EA-3, EA-4, EA-9-OS
0.000	0.000	0.210	0.000	0.090	0.300	Unconnected pavement	EA-1, EA-10-OS, EA-2, EA-3, EA-9-OS
0.000	0.000	0.000	0.140	0.000	0.140	Unconnected roofs	EA-5
0.000	0.270	0.040	0.050	0.000	0.360	Woods/grass comb., Good	EA-10-OS, EA-9-OS
<b>0.109</b>	<b>47.702</b>	<b>1.010</b>	<b>1.338</b>	<b>3.431</b>	<b>53.590</b>	<b>TOTAL AREA</b>	S

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**Pipe Listing (selected nodes)**

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	RCP	80.76	78.20	22.0	0.1164	0.013	36.0	0.0	0.0

Time span=0.00-54.00 hrs, dt=0.01 hrs, 5401 points  
 Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious  
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

<b>Subcatchment EA-1: EA-1</b>	Runoff Area=0.480 ac 68.75% Impervious Runoff Depth=1.85" Tc=6.0 min CN=65/98 Runoff=0.78 cfs 0.074 af
<b>Subcatchment EA-10-OS: EA-10-OS</b>	Runoff Area=0.480 ac 31.25% Impervious Runoff Depth=1.47" Tc=6.0 min CN=79/98 Runoff=0.66 cfs 0.059 af
<b>Subcatchment EA-2: EA-2</b>	Runoff Area=1.290 ac 95.43% Impervious Runoff Depth=2.42" Tc=6.0 min CN=69/98 Runoff=2.78 cfs 0.260 af
<b>Subcatchment EA-3: EA-3</b>	Runoff Area=2.130 ac 83.57% Impervious Runoff Depth=2.24" Tc=6.0 min CN=77/98 Runoff=4.29 cfs 0.398 af
<b>Subcatchment EA-4: EA-4</b>	Runoff Area=0.200 ac 70.00% Impervious Runoff Depth=1.77" Tc=6.0 min CN=48/98 Runoff=0.31 cfs 0.029 af
<b>Subcatchment EA-5: EA-5</b>	Runoff Area=0.140 ac 0.00% Impervious Runoff Depth=2.51" Tc=6.0 min CN=98/0 Runoff=0.31 cfs 0.029 af
<b>Subcatchment EA-6-ROW: EA-6-ROW</b>	Runoff Area=0.120 ac 78.33% Impervious Runoff Depth=1.99" Tc=6.0 min CN=55/98 Runoff=0.21 cfs 0.020 af
<b>Subcatchment EA-7-ROW: EA-7-ROW</b>	Runoff Area=0.110 ac 58.18% Impervious Runoff Depth=1.57" Tc=6.0 min CN=61/98 Runoff=0.15 cfs 0.014 af
<b>Subcatchment EA-8-OS: EA-8-OS</b>	Runoff Area=46.420 ac 30.00% Impervious Runoff Depth=0.94" Flow Length=2,965' Tc=36.1 min CN=61/98 Runoff=13.94 cfs 3.648 af
<b>Subcatchment EA-9-OS: EA-9-OS</b>	Runoff Area=2.220 ac 11.26% Impervious Runoff Depth=0.76" Flow Length=500' Tc=6.7 min CN=69/98 Runoff=1.33 cfs 0.140 af
<b>Reach RCP: 36" RCP</b>	Avg. Flow Depth=0.53' Max Vel=18.39 fps Inflow=15.49 cfs 4.142 af 36.0" Round Pipe n=0.013 L=22.0' S=0.1164 '/' Capacity=227.52 cfs Outflow=15.49 cfs 4.142 af
<b>Link POA-A1: POA-A1 (ROCKY BROOK)</b>	Inflow=17.05 cfs 4.629 af Primary=17.05 cfs 4.629 af
<b>Link POA-A1 A: POA-A1 A (36" CULVERT)</b>	Inflow=15.49 cfs 4.142 af Primary=15.49 cfs 4.142 af
<b>Link POA-A2: POA-A2 (BANK ST)</b>	Inflow=0.46 cfs 0.044 af Primary=0.46 cfs 0.044 af

**Total Runoff Area = 53.590 ac Runoff Volume = 4.673 af Average Runoff Depth = 1.05"**  
**66.48% Pervious = 35.625 ac 33.52% Impervious = 17.965 ac**



**Summary for Subcatchment EA-1: EA-1**

Runoff = 0.78 cfs @ 12.14 hrs, Volume= 0.074 af, Depth= 1.85"

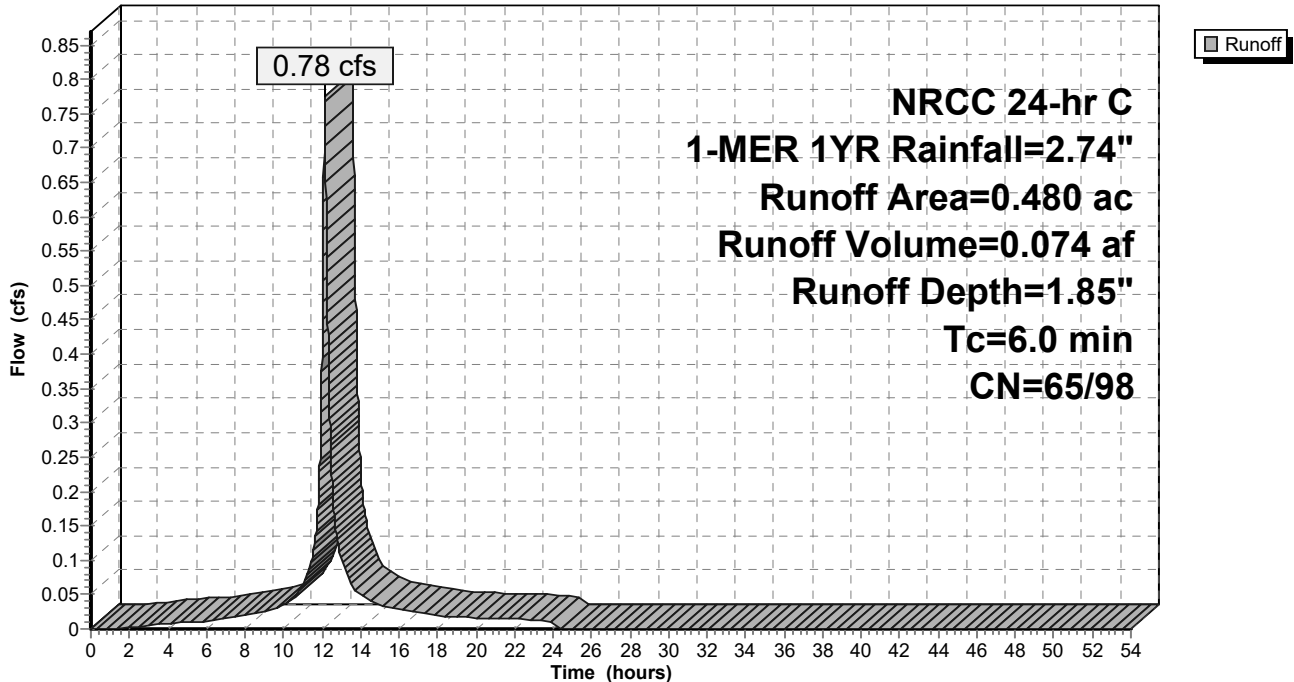
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 1-MER 1YR Rainfall=2.74"

Area (ac)	CN	Description
* 0.330	98	Roofs
* 0.030	98	Unconnected pavement
0.010	91	Gravel roads, HSG D
0.040	39	>75% Grass cover, Good, HSG A
0.070	61	>75% Grass cover, Good, HSG B
0.480	88	Weighted Average
0.150	65	31.25% Pervious Area
0.330	98	68.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EA-1: EA-1**

Hydrograph



**Summary for Subcatchment EA-10-OS: EA-10-OS**

Runoff = 0.66 cfs @ 12.14 hrs, Volume= 0.059 af, Depth= 1.47"

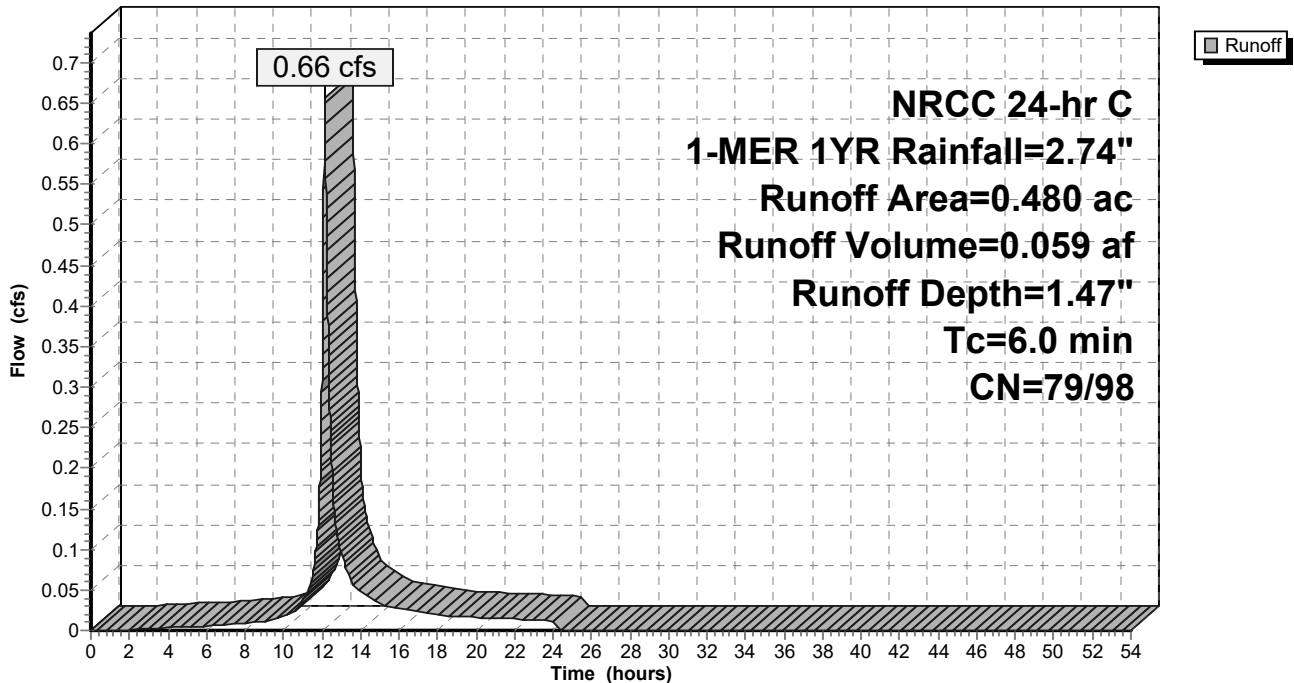
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 1-MER 1YR Rainfall=2.74"

Area (ac)	CN	Description
0.150	98	Roofs, HSG C
0.070	98	Unconnected pavement, HSG C
0.220	74	>75% Grass cover, Good, HSG C
0.040	72	Woods/grass comb., Good, HSG C
0.480	85	Weighted Average
0.330	79	68.75% Pervious Area
0.150	98	31.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EA-10-OS: EA-10-OS**

Hydrograph



**Summary for Subcatchment EA-2: EA-2**

Runoff = 2.78 cfs @ 12.14 hrs, Volume= 0.260 af, Depth= 2.42"

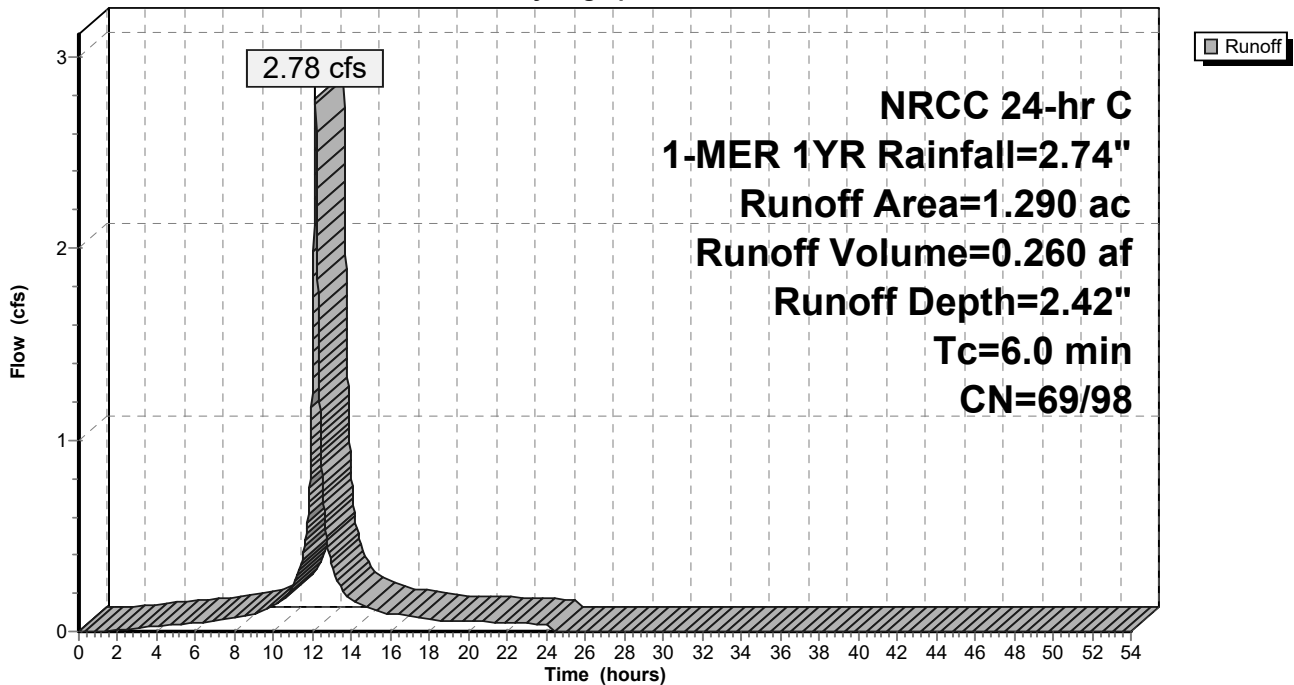
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 1-MER 1YR Rainfall=2.74"

Area (ac)	CN	Description
* 0.581	98	Roofs
* 0.010	98	Unconnected pavement
* 0.650	98	Paved parking
0.015	76	Gravel roads, HSG A
0.022	73	Brush, Good, HSG D
0.012	30	Brush, Good, HSG A
1.290	97	Weighted Average
0.059	69	4.57% Pervious Area
1.231	98	95.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EA-2: EA-2**

Hydrograph



**Summary for Subcatchment EA-3: EA-3**

Runoff = 4.29 cfs @ 12.14 hrs, Volume= 0.398 af, Depth= 2.24"

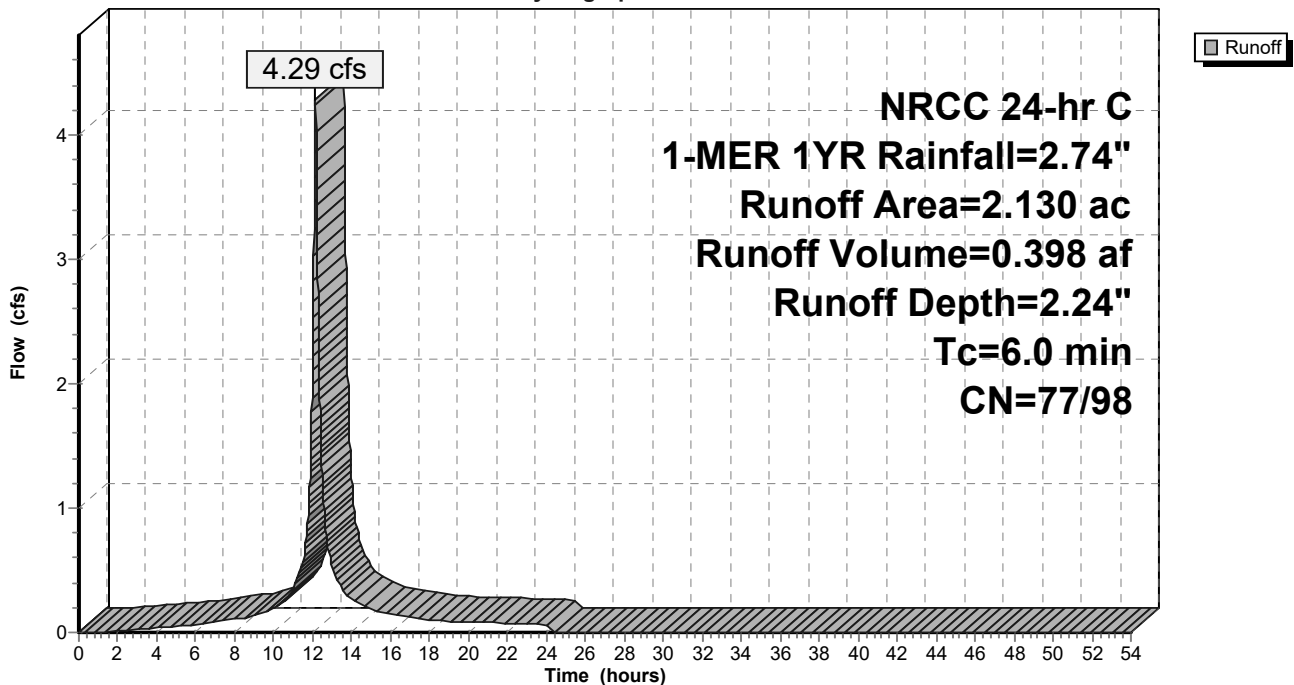
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 1-MER 1YR Rainfall=2.74"

Area (ac)	CN	Description
* 0.420	98	Roofs
* 0.050	98	Unconnected pavement
* 1.360	98	Paved parking
0.300	73	Brush, Good, HSG D
2.130	94	Weighted Average
0.350	77	16.43% Pervious Area
1.780	98	83.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EA-3: EA-3**

Hydrograph



**Summary for Subcatchment EA-4: EA-4**

Runoff = 0.31 cfs @ 12.14 hrs, Volume= 0.029 af, Depth= 1.77"

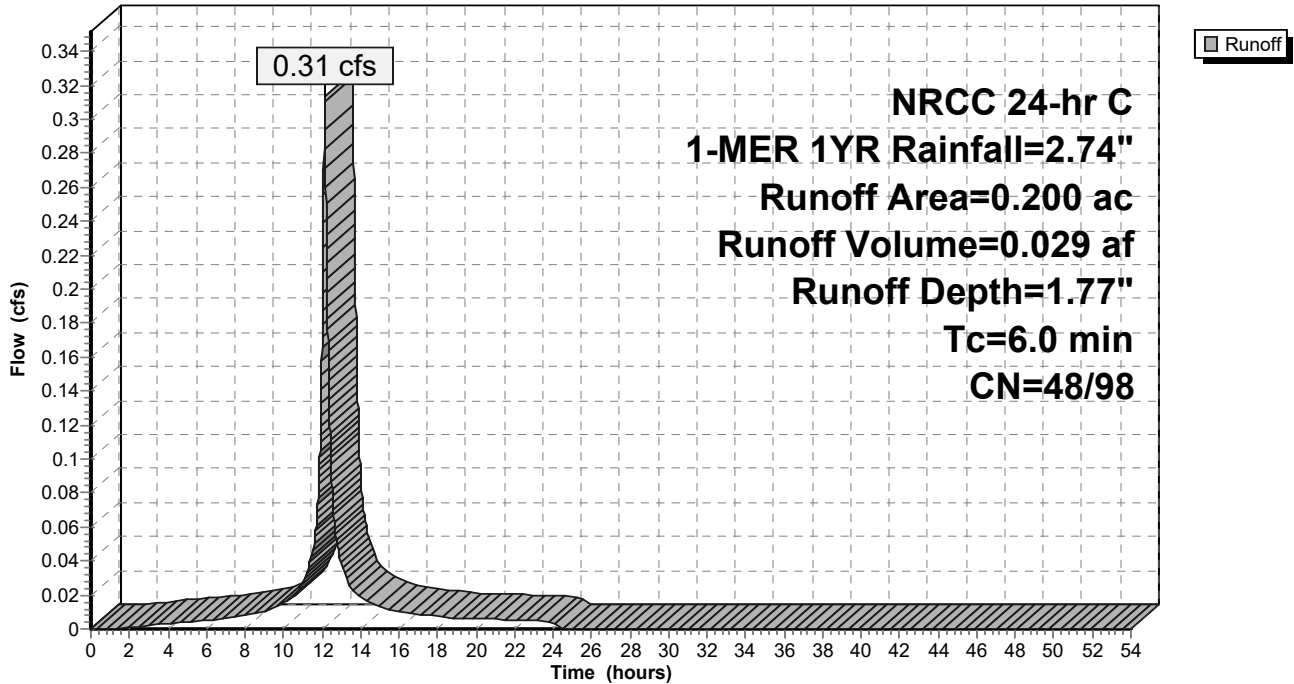
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 1-MER 1YR Rainfall=2.74"

Area (ac)	CN	Description
0.140	98	Roofs, HSG C
0.020	61	>75% Grass cover, Good, HSG B
0.009	39	>75% Grass cover, Good, HSG A
0.010	30	Brush, Good, HSG A
0.021	48	Brush, Good, HSG B
0.200	83	Weighted Average
0.060	48	30.00% Pervious Area
0.140	98	70.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EA-4: EA-4**

Hydrograph



### Summary for Subcatchment EA-5: EA-5

Runoff = 0.31 cfs @ 12.14 hrs, Volume= 0.029 af, Depth= 2.51"

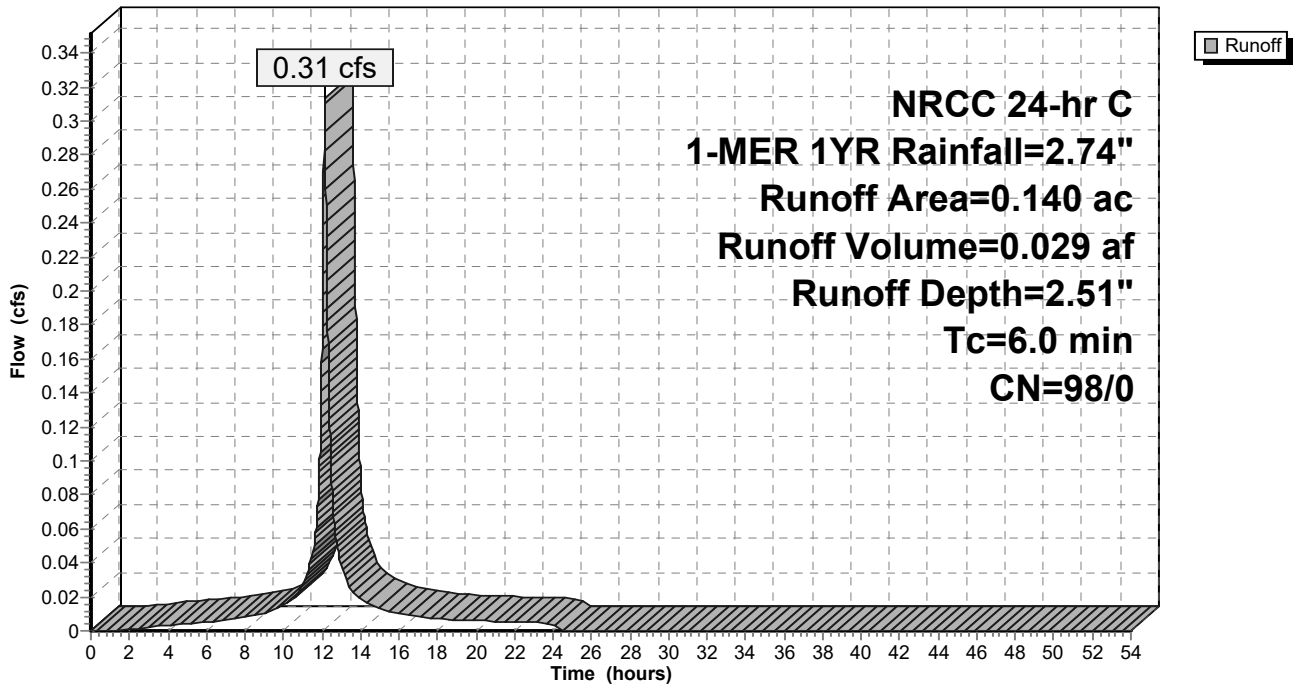
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 1-MER 1YR Rainfall=2.74"

Area (ac)	CN	Description
0.140	98	Unconnected roofs, HSG D
0.140	98	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

### Subcatchment EA-5: EA-5

Hydrograph



**Summary for Subcatchment EA-6-ROW: EA-6-ROW**

Runoff = 0.21 cfs @ 12.14 hrs, Volume= 0.020 af, Depth= 1.99"

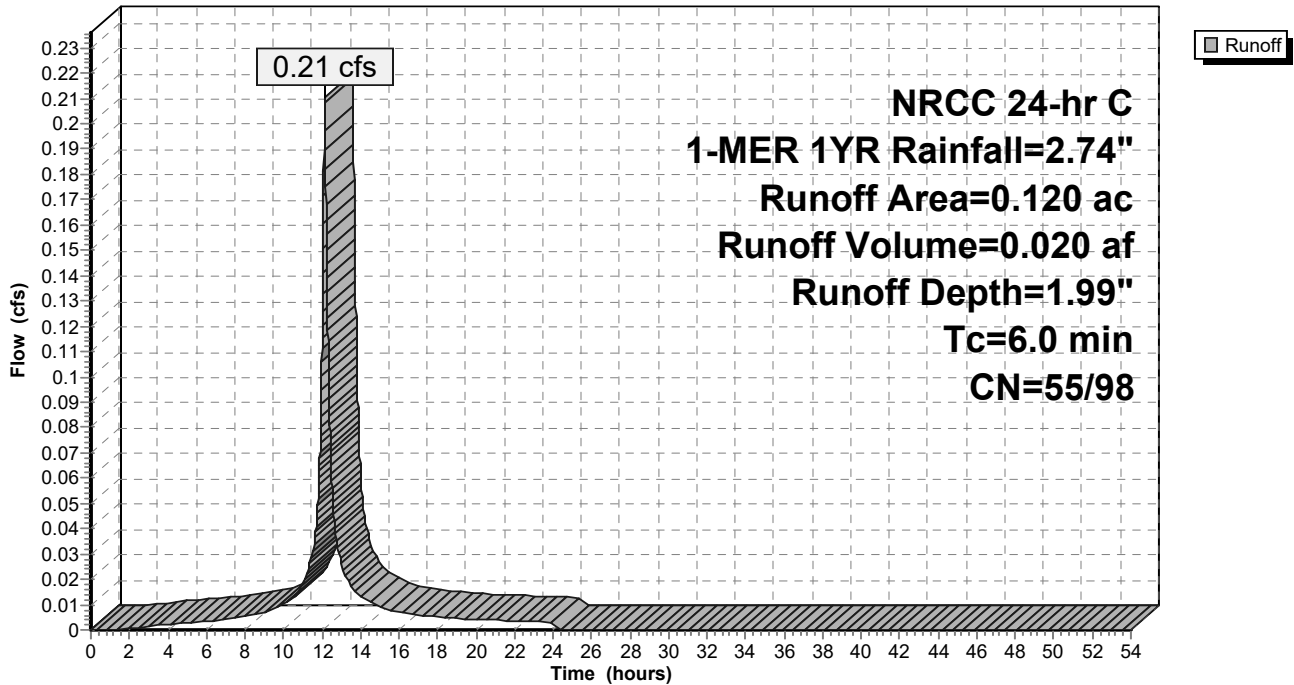
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 1-MER 1YR Rainfall=2.74"

Area (ac)	CN	Description
0.007	39	>75% Grass cover, Good, HSG A
0.019	61	>75% Grass cover, Good, HSG B
0.094	98	Paved roads w/curbs & sewers, HSG D
0.120	89	Weighted Average
0.026	55	21.67% Pervious Area
0.094	98	78.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EA-6-ROW: EA-6-ROW**

Hydrograph



**Summary for Subcatchment EA-7-ROW: EA-7-ROW**

Runoff = 0.15 cfs @ 12.14 hrs, Volume= 0.014 af, Depth= 1.57"

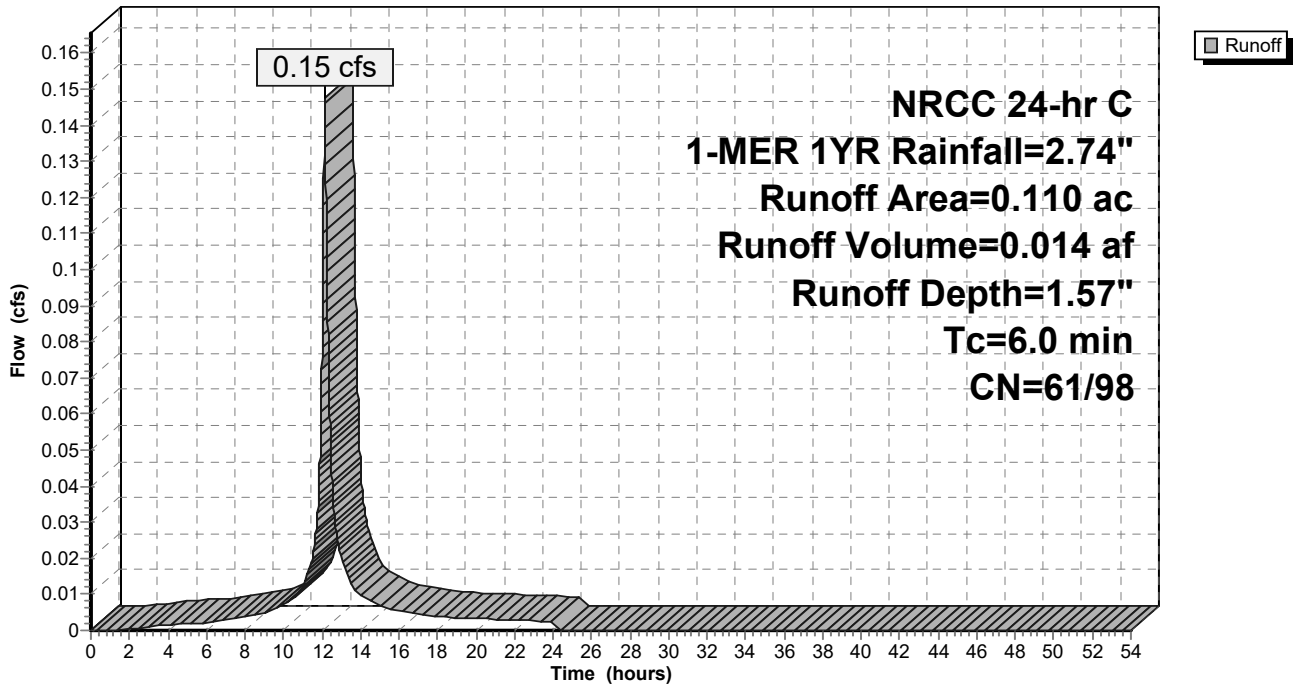
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 1-MER 1YR Rainfall=2.74"

Area (ac)	CN	Description
0.016	39	>75% Grass cover, Good, HSG A
0.012	61	>75% Grass cover, Good, HSG B
0.018	80	>75% Grass cover, Good, HSG D
0.064	98	Paved roads w/curbs & sewers, HSG D
0.110	82	Weighted Average
0.046	61	41.82% Pervious Area
0.064	98	58.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EA-7-ROW: EA-7-ROW**

Hydrograph





**Summary for Subcatchment EA-8-OS: EA-8-OS**

Runoff = 13.94 cfs @ 12.52 hrs, Volume= 3.648 af, Depth= 0.94"

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 1-MER 1YR Rainfall=2.74"

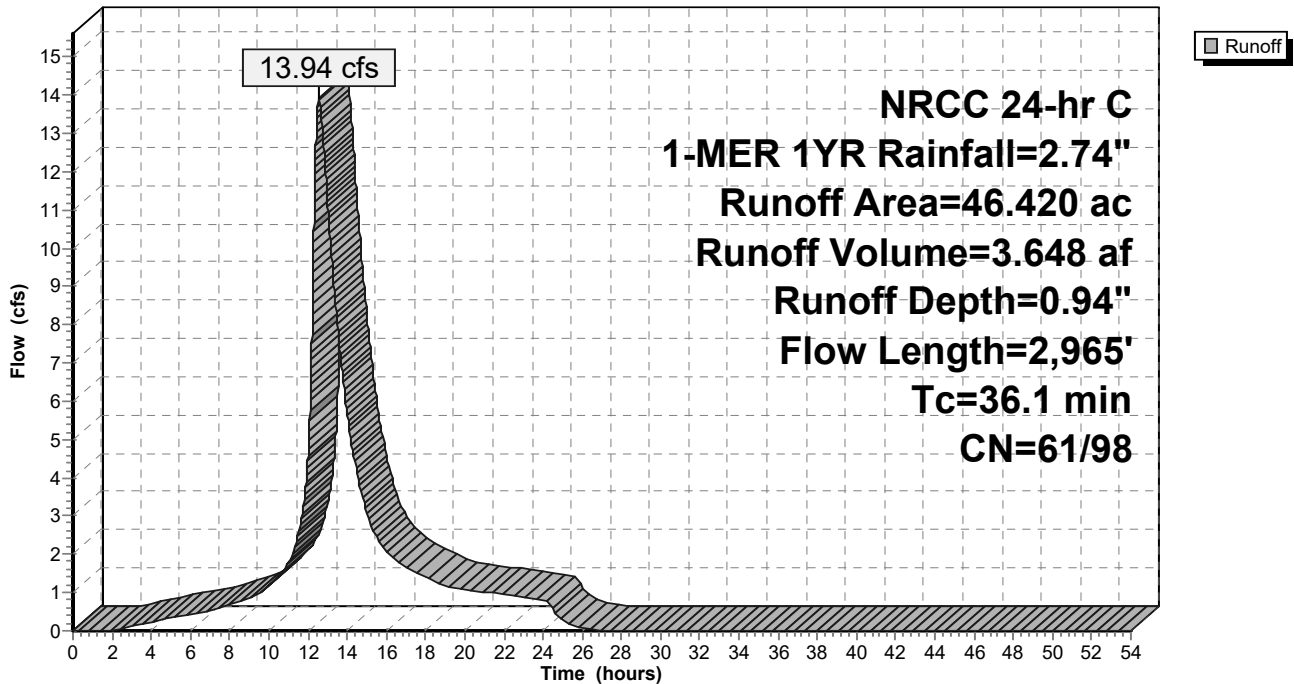
Area (ac)	CN	Description
46.420	72	1/3 acre lots, 30% imp, HSG B
32.494	61	70.00% Pervious Area
13.926	98	30.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.7	100	0.0100	0.13		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.31"
3.9	370	0.0060	1.57		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
17.5	2,100		2.00		<b>Direct Entry, Pipe Flow</b>
2.0	395	0.0170	3.22	57.93	<b>Trap/Vee/Rect Channel Flow,</b> Bot.W=4.50' D=2.00' Z= 2.0 & 2.5 ' Top.W=13.50' n= 0.070
36.1	2,965	Total			

**Subcatchment EA-8-OS: EA-8-OS**

Hydrograph



**Summary for Subcatchment EA-9-OS: EA-9-OS**

Runoff = 1.33 cfs @ 12.16 hrs, Volume= 0.140 af, Depth= 0.76"

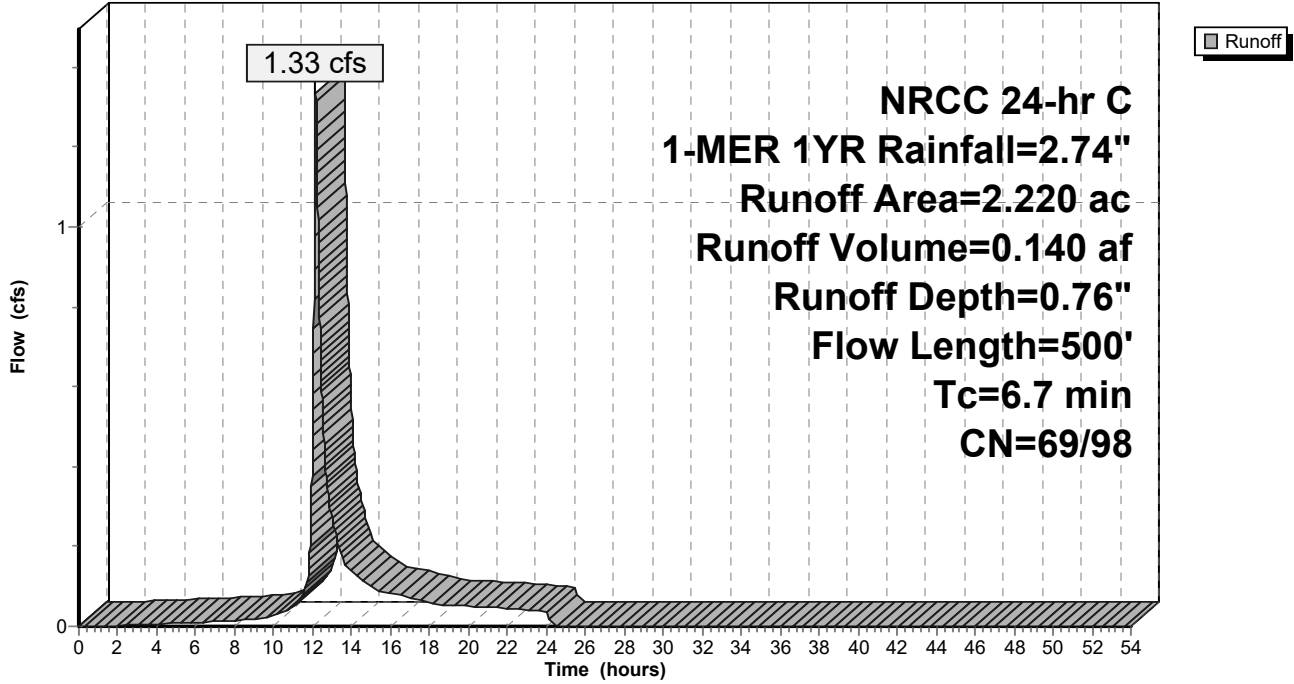
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 1-MER 1YR Rainfall=2.74"

Area (ac)	CN	Description
0.250	98	Roofs, HSG C
0.140	98	Unconnected pavement, HSG C
0.430	80	>75% Grass cover, Good, HSG D
0.870	61	>75% Grass cover, Good, HSG B
0.270	58	Woods/grass comb., Good, HSG B
0.050	79	Woods/grass comb., Good, HSG D
0.210	73	Brush, Good, HSG D
2.220	72	Weighted Average
1.970	69	88.74% Pervious Area
0.250	98	11.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	70	0.0900	0.29		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.31"
1.5	190	0.0900	2.10		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
1.2	240	0.0170	3.22	57.93	<b>Trap/Vee/Rect Channel Flow,</b> Bot.W=4.50' D=2.00' Z= 2.0 & 2.5 '/' Top.W=13.50' n= 0.070
6.7	500	Total			

Subcatchment EA-9-OS: EA-9-OS

Hydrograph



### Summary for Reach RCP: 36" RCP

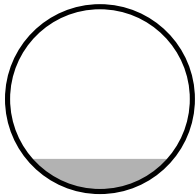
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 50.530 ac, 31.33% Impervious, Inflow Depth = 0.98" for 1-MER 1YR event  
 Inflow = 15.49 cfs @ 12.51 hrs, Volume= 4.142 af  
 Outflow = 15.49 cfs @ 12.51 hrs, Volume= 4.142 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs  
 Max. Velocity= 18.39 fps, Min. Travel Time= 0.0 min  
 Avg. Velocity = 8.21 fps, Avg. Travel Time= 0.0 min

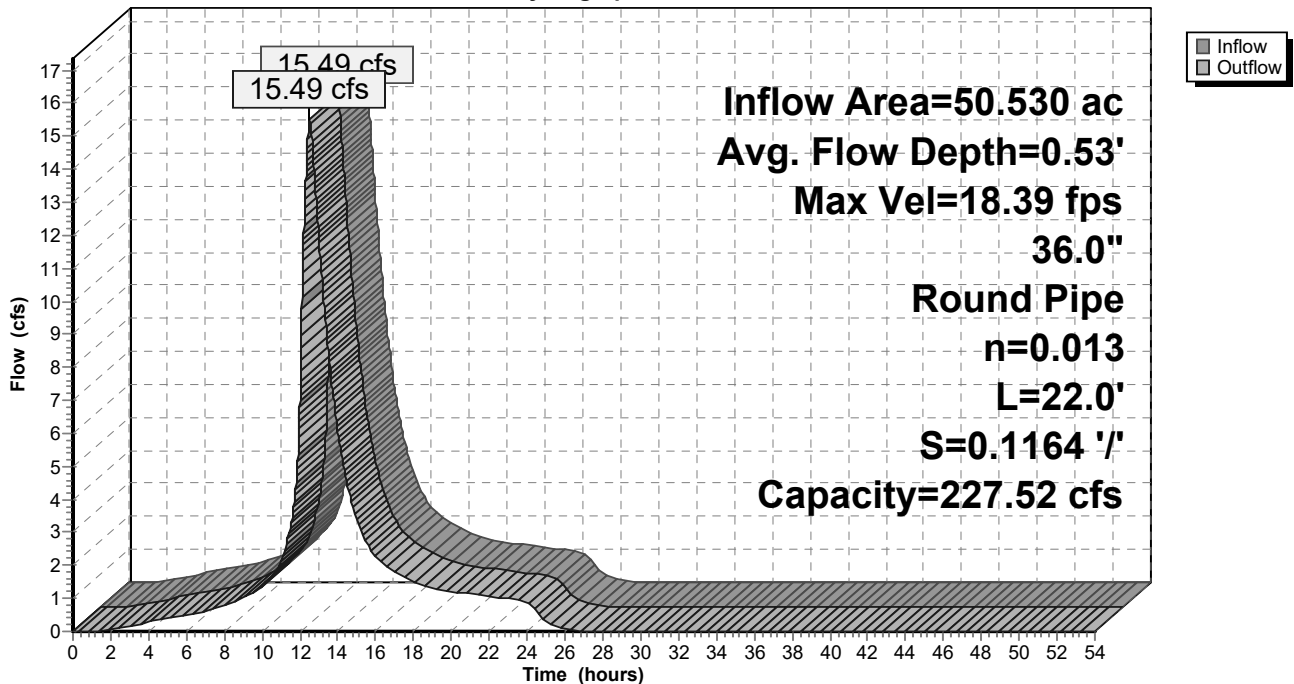
Peak Storage= 19 cf @ 12.51 hrs  
 Average Depth at Peak Storage= 0.53' , Surface Width= 2.29'  
 Bank-Full Depth= 3.00' Flow Area= 7.1 sf, Capacity= 227.52 cfs

36.0" Round Pipe  
 n= 0.013 Concrete pipe, bends & connections  
 Length= 22.0' Slope= 0.1164 '/'  
 Inlet Invert= 80.76', Outlet Invert= 78.20'



### Reach RCP: 36" RCP

Hydrograph



### Summary for Link POA-A1: POA-A1 (ROCKY BROOK)

[62] Hint: Exceeded Reach RCP OUTLET depth by 1.80' @ 0.00 hrs

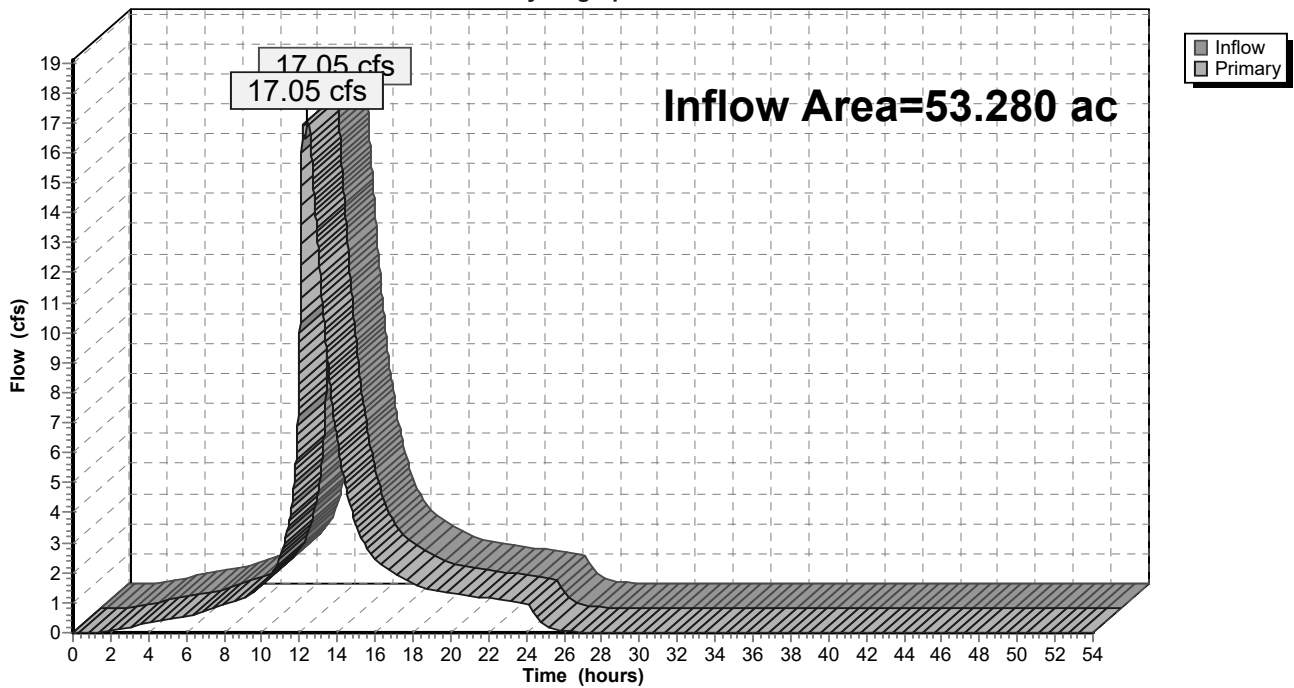
Inflow Area = 53.280 ac, 33.34% Impervious, Inflow Depth = 1.04" for 1-MER 1YR event  
 Inflow = 17.05 cfs @ 12.44 hrs, Volume= 4.629 af  
 Primary = 17.05 cfs @ 12.44 hrs, Volume= 4.629 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

Fixed water surface Elevation= 80.00'

### Link POA-A1: POA-A1 (ROCKY BROOK)

Hydrograph

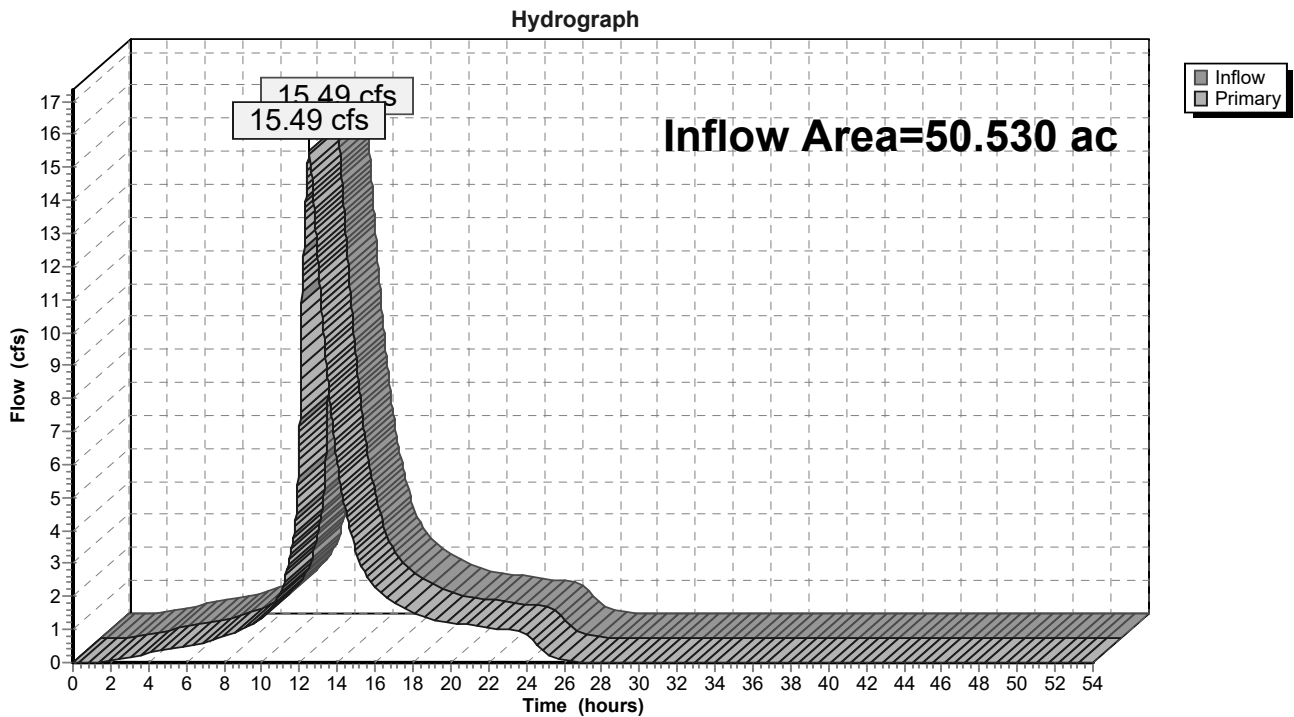


### Summary for Link POA-A1 A: POA-A1 A (36" CULVERT)

Inflow Area = 50.530 ac, 31.33% Impervious, Inflow Depth = 0.98" for 1-MER 1YR event  
Inflow = 15.49 cfs @ 12.51 hrs, Volume= 4.142 af  
Primary = 15.49 cfs @ 12.51 hrs, Volume= 4.142 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-A1 A: POA-A1 A (36" CULVERT)

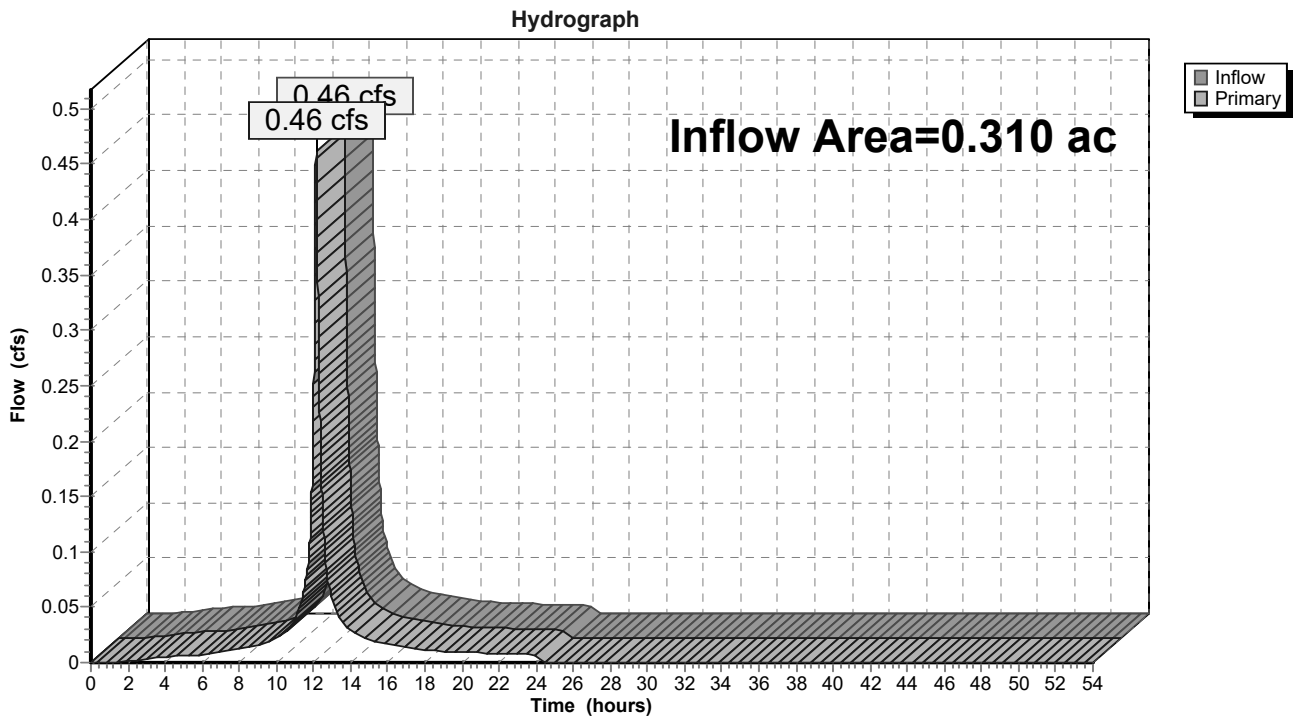


### Summary for Link POA-A2: POA-A2 (BANK ST)

Inflow Area = 0.310 ac, 65.81% Impervious, Inflow Depth = 1.70" for 1-MER 1YR event  
Inflow = 0.46 cfs @ 12.14 hrs, Volume= 0.044 af  
Primary = 0.46 cfs @ 12.14 hrs, Volume= 0.044 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-A2: POA-A2 (BANK ST)



Time span=0.00-54.00 hrs, dt=0.01 hrs, 5401 points  
 Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious  
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

<b>Subcatchment EA-1: EA-1</b>	Runoff Area=0.480 ac 68.75% Impervious Runoff Depth=2.32" Tc=6.0 min CN=65/98 Runoff=0.98 cfs 0.093 af
<b>Subcatchment EA-10-OS: EA-10-OS</b>	Runoff Area=0.480 ac 31.25% Impervious Runoff Depth=1.94" Tc=6.0 min CN=79/98 Runoff=0.87 cfs 0.078 af
<b>Subcatchment EA-2: EA-2</b>	Runoff Area=1.290 ac 95.43% Impervious Runoff Depth=2.97" Tc=6.0 min CN=69/98 Runoff=3.40 cfs 0.320 af
<b>Subcatchment EA-3: EA-3</b>	Runoff Area=2.130 ac 83.57% Impervious Runoff Depth=2.78" Tc=6.0 min CN=77/98 Runoff=5.29 cfs 0.494 af
<b>Subcatchment EA-4: EA-4</b>	Runoff Area=0.200 ac 70.00% Impervious Runoff Depth=2.19" Tc=6.0 min CN=48/98 Runoff=0.38 cfs 0.036 af
<b>Subcatchment EA-5: EA-5</b>	Runoff Area=0.140 ac 0.00% Impervious Runoff Depth=3.08" Tc=6.0 min CN=98/0 Runoff=0.38 cfs 0.036 af
<b>Subcatchment EA-6-ROW: EA-6-ROW</b>	Runoff Area=0.120 ac 78.33% Impervious Runoff Depth=2.47" Tc=6.0 min CN=55/98 Runoff=0.26 cfs 0.025 af
<b>Subcatchment EA-7-ROW: EA-7-ROW</b>	Runoff Area=0.110 ac 58.18% Impervious Runoff Depth=2.00" Tc=6.0 min CN=61/98 Runoff=0.19 cfs 0.018 af
<b>Subcatchment EA-8-OS: EA-8-OS</b>	Runoff Area=46.420 ac 30.00% Impervious Runoff Depth=1.27" Flow Length=2,965' Tc=36.1 min CN=61/98 Runoff=18.95 cfs 4.897 af
<b>Subcatchment EA-9-OS: EA-9-OS</b>	Runoff Area=2.220 ac 11.26% Impervious Runoff Depth=1.09" Flow Length=500' Tc=6.7 min CN=69/98 Runoff=2.06 cfs 0.202 af
<b>Reach RCP: 36" RCP</b>	Avg. Flow Depth=0.62' Max Vel=20.10 fps Inflow=20.97 cfs 5.537 af 36.0" Round Pipe n=0.013 L=22.0' S=0.1164 '/' Capacity=227.52 cfs Outflow=20.97 cfs 5.537 af
<b>Link POA-A1: POA-A1 (ROCKY BROOK)</b>	Inflow=22.79 cfs 6.144 af Primary=22.79 cfs 6.144 af
<b>Link POA-A1 A: POA-A1 A (36" CULVERT)</b>	Inflow=20.97 cfs 5.537 af Primary=20.97 cfs 5.537 af
<b>Link POA-A2: POA-A2 (BANK ST)</b>	Inflow=0.57 cfs 0.055 af Primary=0.57 cfs 0.055 af

**Total Runoff Area = 53.590 ac Runoff Volume = 6.199 af Average Runoff Depth = 1.39"**  
**66.48% Pervious = 35.625 ac 33.52% Impervious = 17.965 ac**



**Summary for Subcatchment EA-1: EA-1**

Runoff = 0.98 cfs @ 12.14 hrs, Volume= 0.093 af, Depth= 2.32"

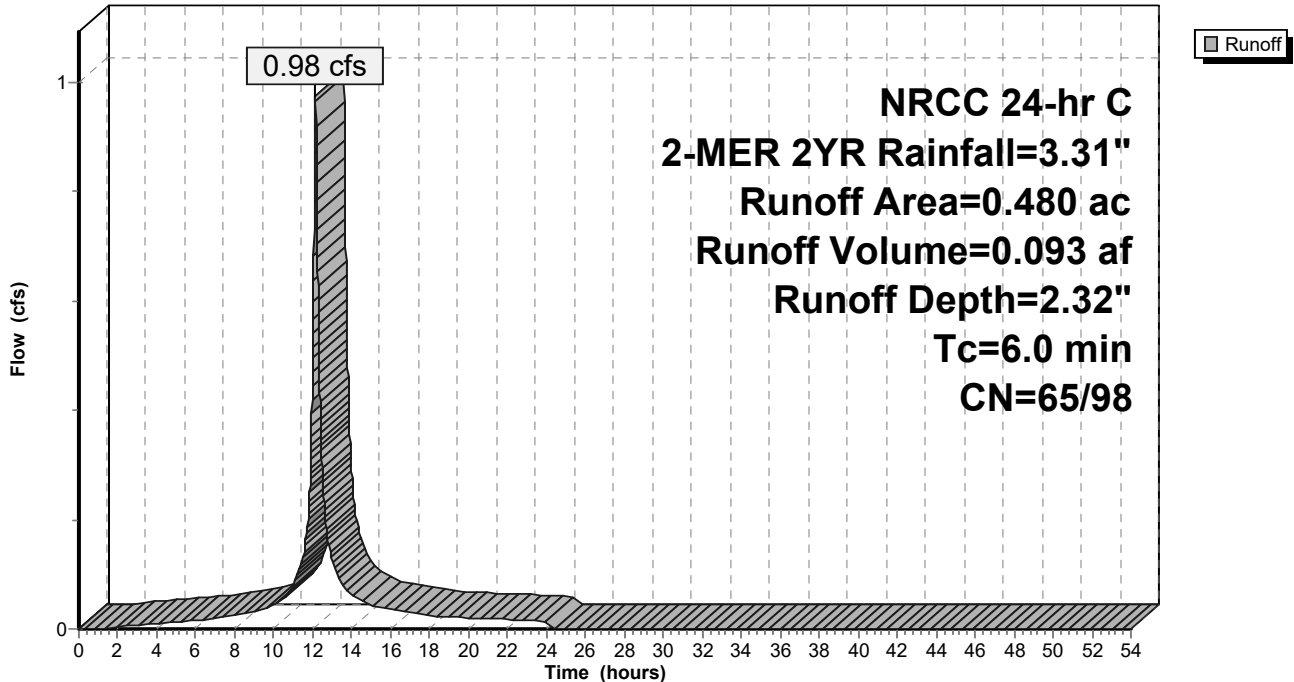
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 2-MER 2YR Rainfall=3.31"

Area (ac)	CN	Description
* 0.330	98	Roofs
* 0.030	98	Unconnected pavement
0.010	91	Gravel roads, HSG D
0.040	39	>75% Grass cover, Good, HSG A
0.070	61	>75% Grass cover, Good, HSG B
0.480	88	Weighted Average
0.150	65	31.25% Pervious Area
0.330	98	68.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EA-1: EA-1**

Hydrograph



**Summary for Subcatchment EA-10-OS: EA-10-OS**

Runoff = 0.87 cfs @ 12.14 hrs, Volume= 0.078 af, Depth= 1.94"

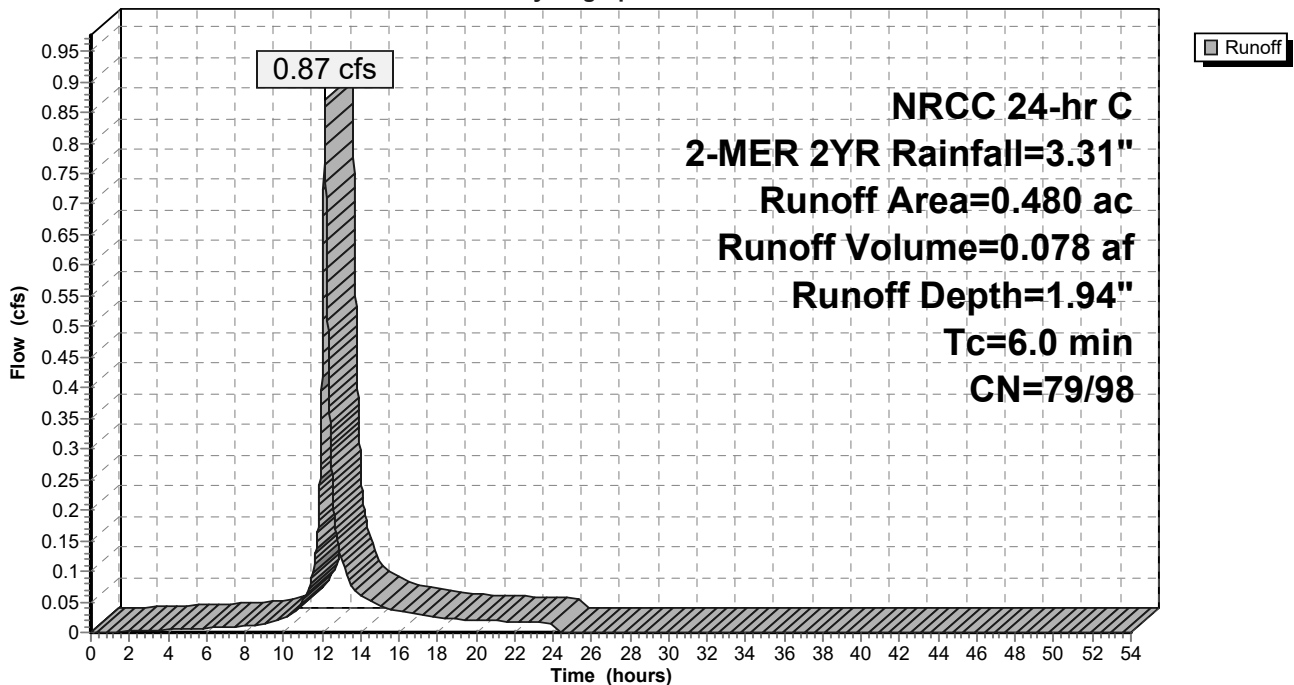
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 2-MER 2YR Rainfall=3.31"

Area (ac)	CN	Description
0.150	98	Roofs, HSG C
0.070	98	Unconnected pavement, HSG C
0.220	74	>75% Grass cover, Good, HSG C
0.040	72	Woods/grass comb., Good, HSG C
0.480	85	Weighted Average
0.330	79	68.75% Pervious Area
0.150	98	31.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EA-10-OS: EA-10-OS**

Hydrograph



**Summary for Subcatchment EA-2: EA-2**

Runoff = 3.40 cfs @ 12.14 hrs, Volume= 0.320 af, Depth= 2.97"

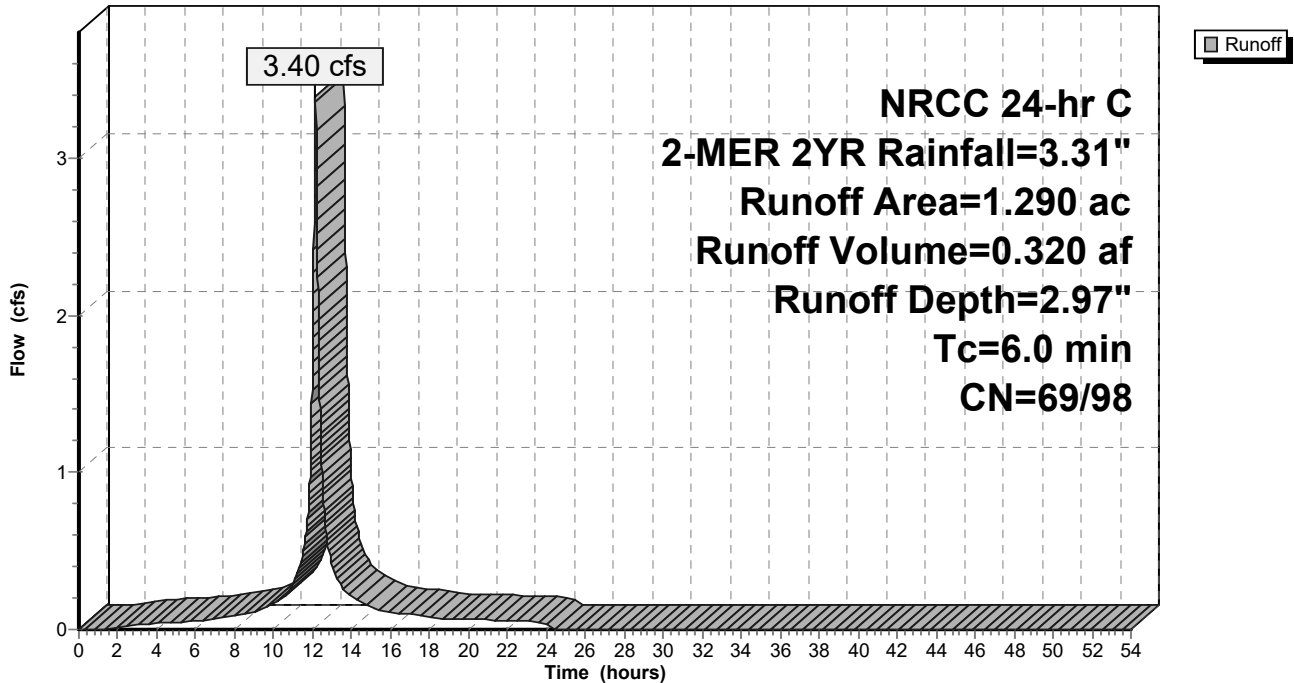
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 2-MER 2YR Rainfall=3.31"

Area (ac)	CN	Description
* 0.581	98	Roofs
* 0.010	98	Unconnected pavement
* 0.650	98	Paved parking
0.015	76	Gravel roads, HSG A
0.022	73	Brush, Good, HSG D
0.012	30	Brush, Good, HSG A
1.290	97	Weighted Average
0.059	69	4.57% Pervious Area
1.231	98	95.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EA-2: EA-2**

Hydrograph



**Summary for Subcatchment EA-3: EA-3**

Runoff = 5.29 cfs @ 12.14 hrs, Volume= 0.494 af, Depth= 2.78"

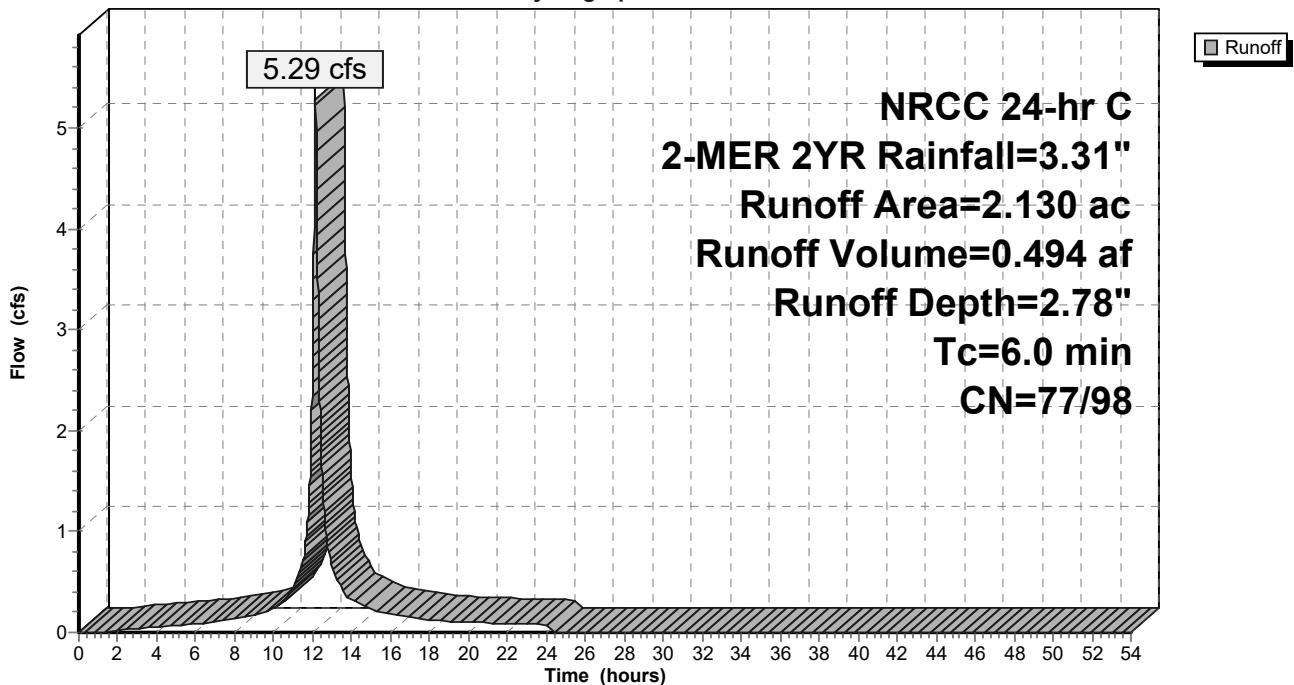
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 2-MER 2YR Rainfall=3.31"

Area (ac)	CN	Description
* 0.420	98	Roofs
* 0.050	98	Unconnected pavement
* 1.360	98	Paved parking
0.300	73	Brush, Good, HSG D
2.130	94	Weighted Average
0.350	77	16.43% Pervious Area
1.780	98	83.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EA-3: EA-3**

Hydrograph



**Summary for Subcatchment EA-4: EA-4**

Runoff = 0.38 cfs @ 12.14 hrs, Volume= 0.036 af, Depth= 2.19"

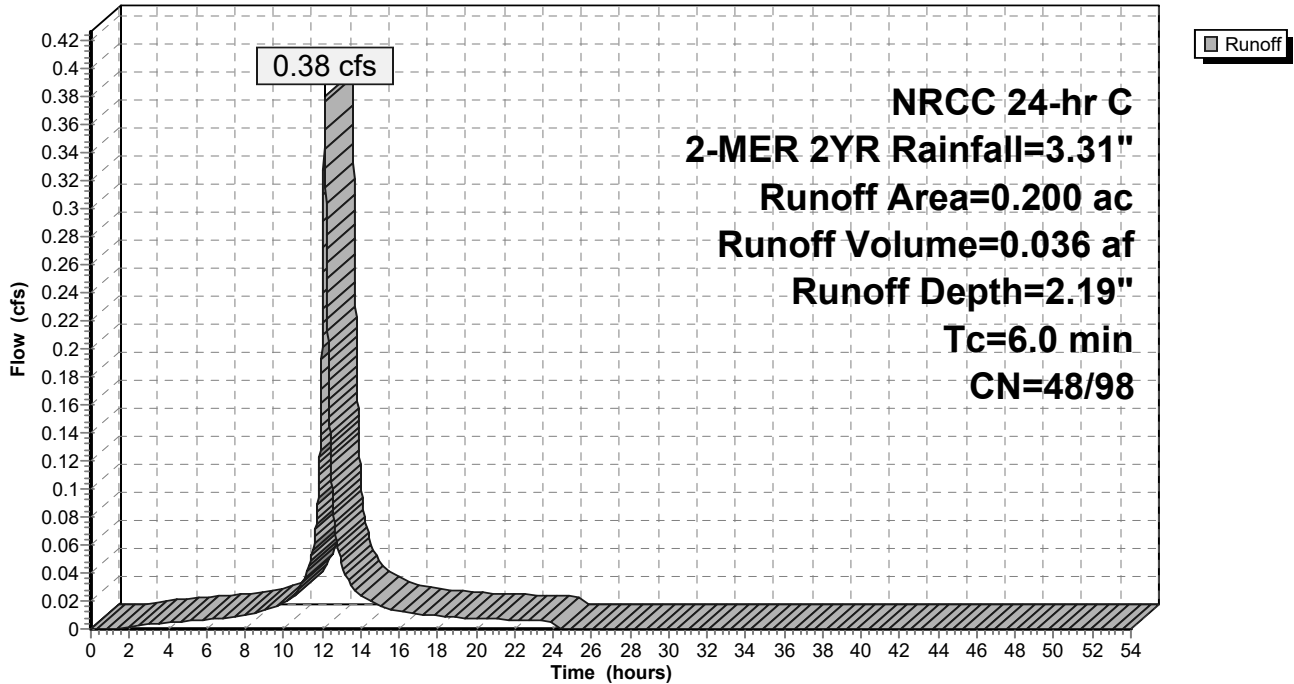
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 2-MER 2YR Rainfall=3.31"

Area (ac)	CN	Description
0.140	98	Roofs, HSG C
0.020	61	>75% Grass cover, Good, HSG B
0.009	39	>75% Grass cover, Good, HSG A
0.010	30	Brush, Good, HSG A
0.021	48	Brush, Good, HSG B
0.200	83	Weighted Average
0.060	48	30.00% Pervious Area
0.140	98	70.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EA-4: EA-4**

Hydrograph



**Summary for Subcatchment EA-5: EA-5**

Runoff = 0.38 cfs @ 12.14 hrs, Volume= 0.036 af, Depth= 3.08"

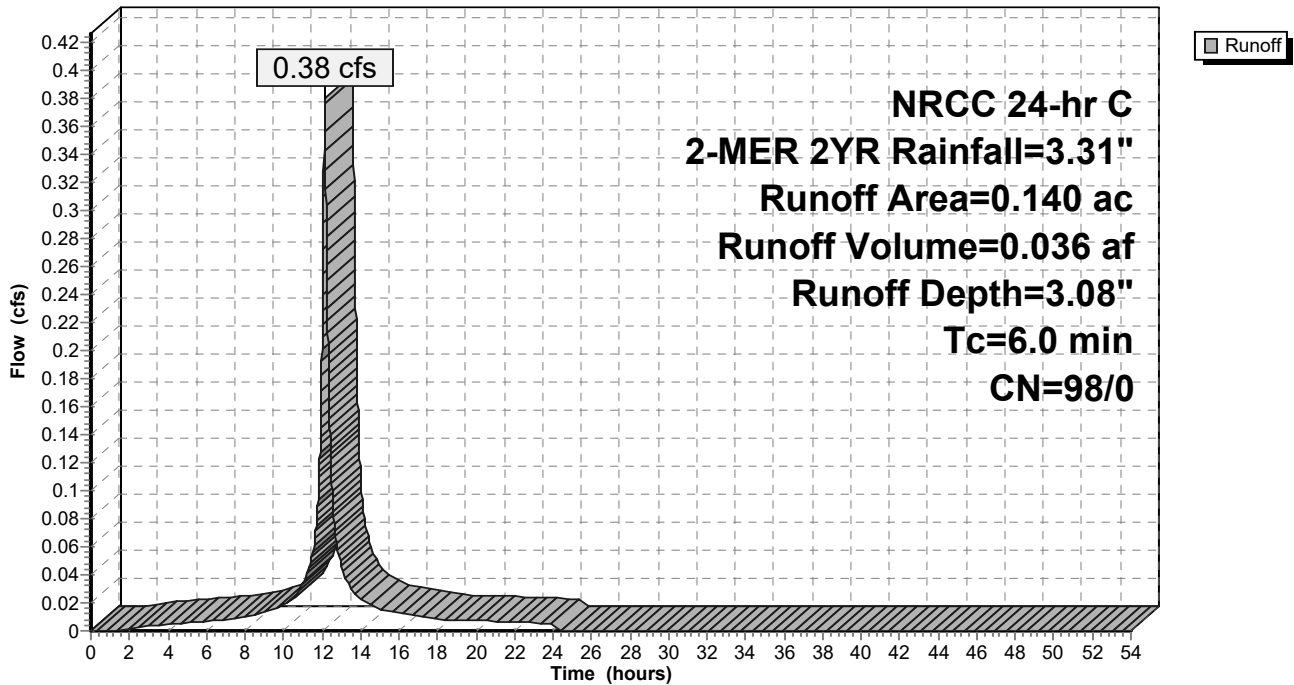
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 2-MER 2YR Rainfall=3.31"

Area (ac)	CN	Description
0.140	98	Unconnected roofs, HSG D
0.140	98	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EA-5: EA-5**

Hydrograph



**Summary for Subcatchment EA-6-ROW: EA-6-ROW**

Runoff = 0.26 cfs @ 12.14 hrs, Volume= 0.025 af, Depth= 2.47"

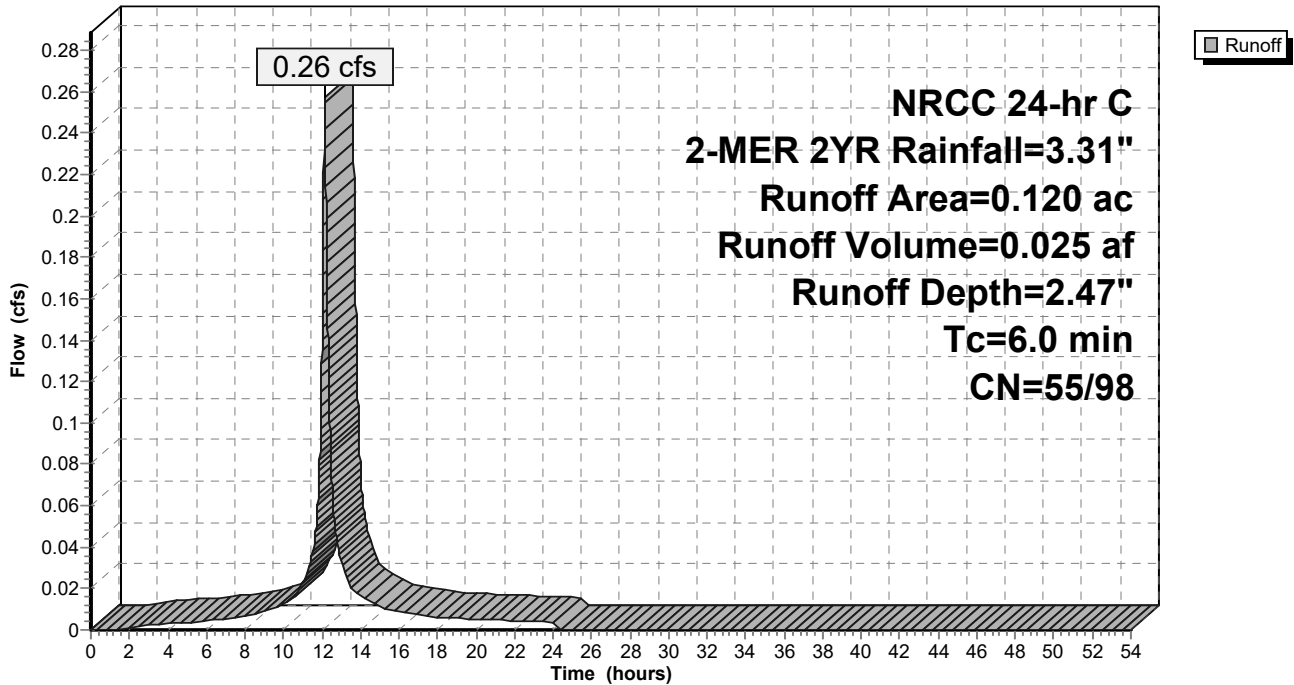
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 2-MER 2YR Rainfall=3.31"

Area (ac)	CN	Description
0.007	39	>75% Grass cover, Good, HSG A
0.019	61	>75% Grass cover, Good, HSG B
0.094	98	Paved roads w/curbs & sewers, HSG D
0.120	89	Weighted Average
0.026	55	21.67% Pervious Area
0.094	98	78.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EA-6-ROW: EA-6-ROW**

Hydrograph



**Summary for Subcatchment EA-7-ROW: EA-7-ROW**

Runoff = 0.19 cfs @ 12.14 hrs, Volume= 0.018 af, Depth= 2.00"

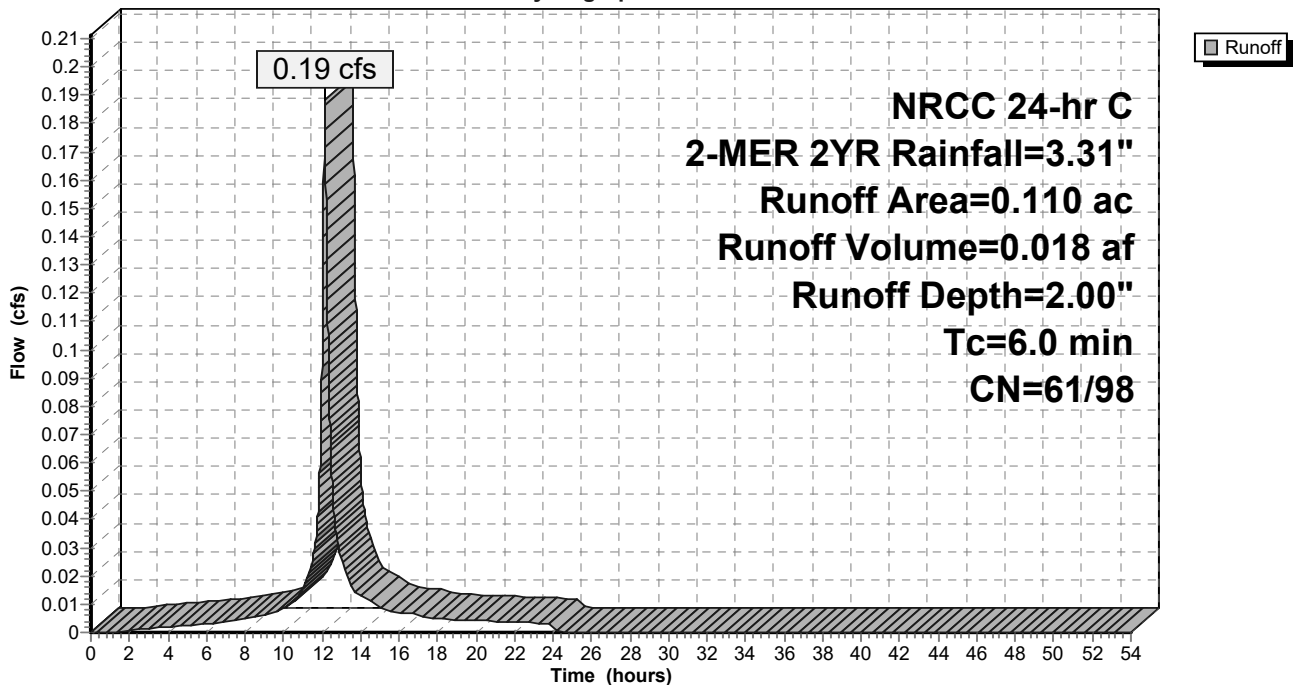
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 2-MER 2YR Rainfall=3.31"

Area (ac)	CN	Description
0.016	39	>75% Grass cover, Good, HSG A
0.012	61	>75% Grass cover, Good, HSG B
0.018	80	>75% Grass cover, Good, HSG D
0.064	98	Paved roads w/curbs & sewers, HSG D
0.110	82	Weighted Average
0.046	61	41.82% Pervious Area
0.064	98	58.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EA-7-ROW: EA-7-ROW**

Hydrograph





**Summary for Subcatchment EA-8-OS: EA-8-OS**

Runoff = 18.95 cfs @ 12.52 hrs, Volume= 4.897 af, Depth= 1.27"

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 2-MER 2YR Rainfall=3.31"

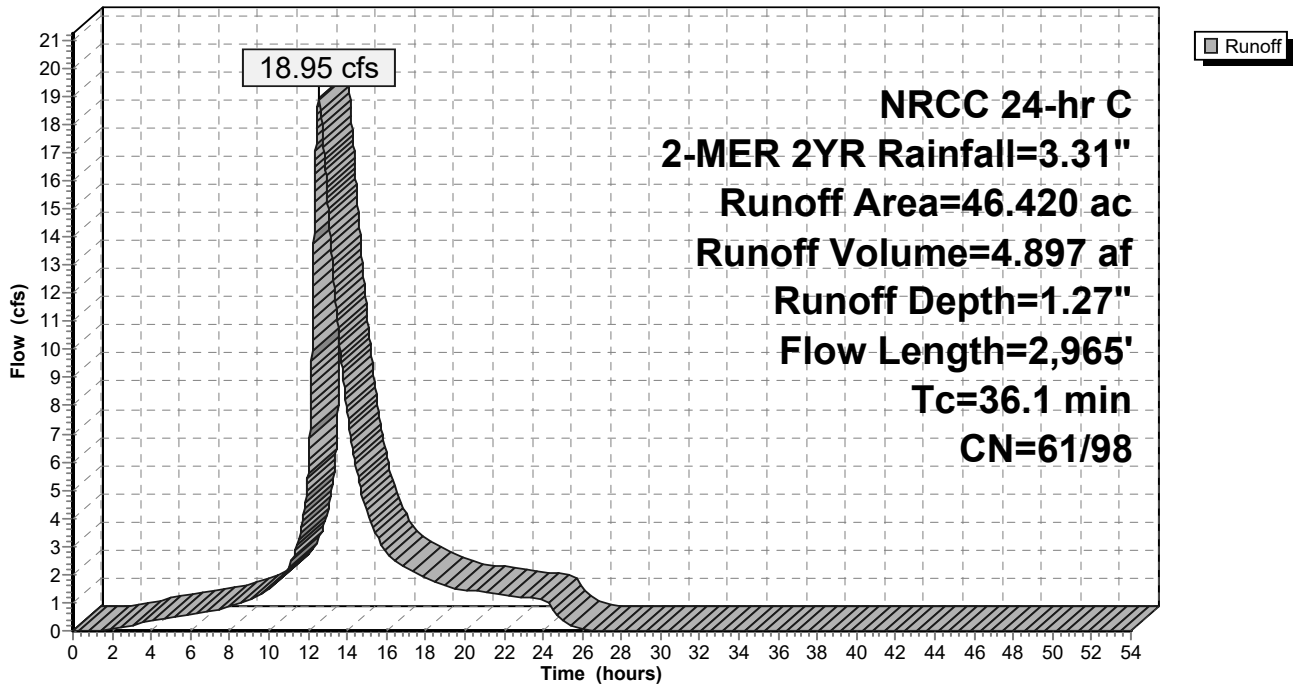
Area (ac)	CN	Description
46.420	72	1/3 acre lots, 30% imp, HSG B
32.494	61	70.00% Pervious Area
13.926	98	30.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.7	100	0.0100	0.13		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.31"
3.9	370	0.0060	1.57		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
17.5	2,100		2.00		<b>Direct Entry, Pipe Flow</b>
2.0	395	0.0170	3.22	57.93	<b>Trap/Vee/Rect Channel Flow,</b> Bot.W=4.50' D=2.00' Z= 2.0 & 2.5 ' Top.W=13.50' n= 0.070
36.1	2,965	Total			

**Subcatchment EA-8-OS: EA-8-OS**

Hydrograph



**Summary for Subcatchment EA-9-OS: EA-9-OS**

Runoff = 2.06 cfs @ 12.15 hrs, Volume= 0.202 af, Depth= 1.09"

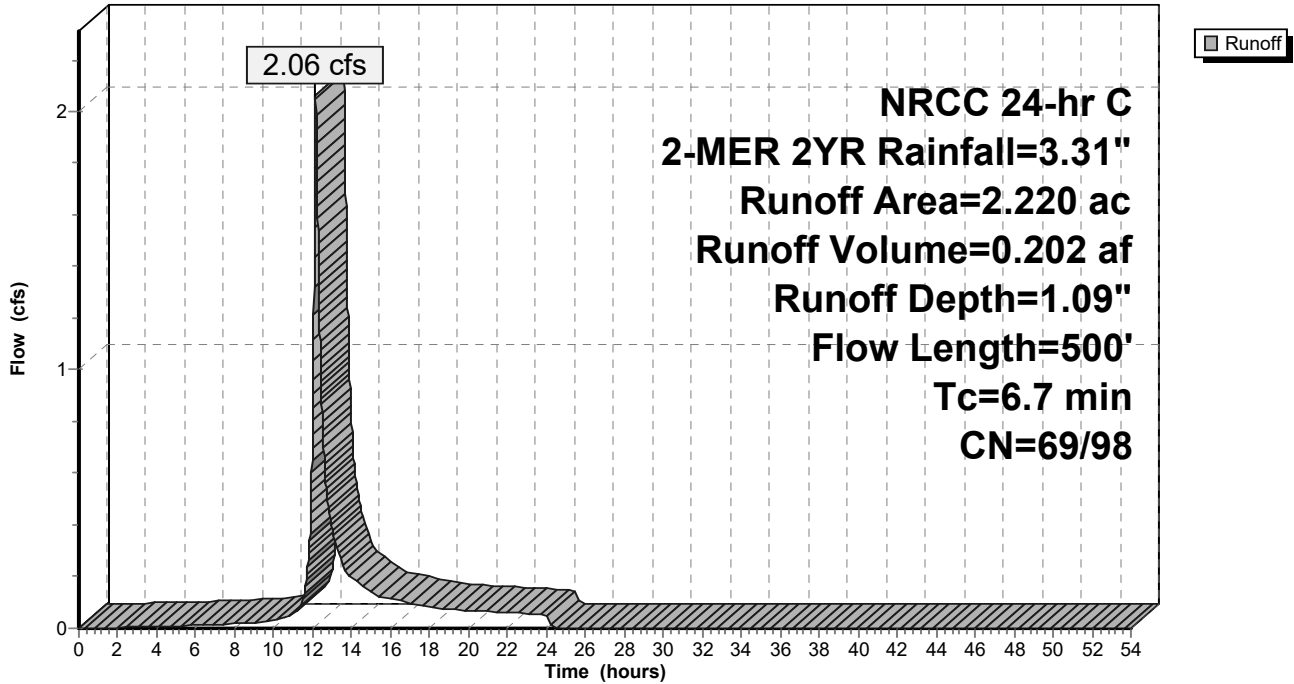
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 2-MER 2YR Rainfall=3.31"

Area (ac)	CN	Description
0.250	98	Roofs, HSG C
0.140	98	Unconnected pavement, HSG C
0.430	80	>75% Grass cover, Good, HSG D
0.870	61	>75% Grass cover, Good, HSG B
0.270	58	Woods/grass comb., Good, HSG B
0.050	79	Woods/grass comb., Good, HSG D
0.210	73	Brush, Good, HSG D
2.220	72	Weighted Average
1.970	69	88.74% Pervious Area
0.250	98	11.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	70	0.0900	0.29		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.31"
1.5	190	0.0900	2.10		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
1.2	240	0.0170	3.22	57.93	<b>Trap/Vee/Rect Channel Flow,</b> Bot.W=4.50' D=2.00' Z= 2.0 & 2.5 '/' Top.W=13.50' n= 0.070
6.7	500	Total			

Subcatchment EA-9-OS: EA-9-OS

Hydrograph



### Summary for Reach RCP: 36" RCP

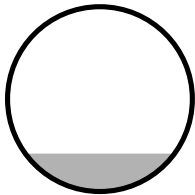
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 50.530 ac, 31.33% Impervious, Inflow Depth = 1.31" for 2-MER 2YR event  
 Inflow = 20.97 cfs @ 12.52 hrs, Volume= 5.537 af  
 Outflow = 20.97 cfs @ 12.52 hrs, Volume= 5.537 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs  
 Max. Velocity= 20.10 fps, Min. Travel Time= 0.0 min  
 Avg. Velocity = 8.89 fps, Avg. Travel Time= 0.0 min

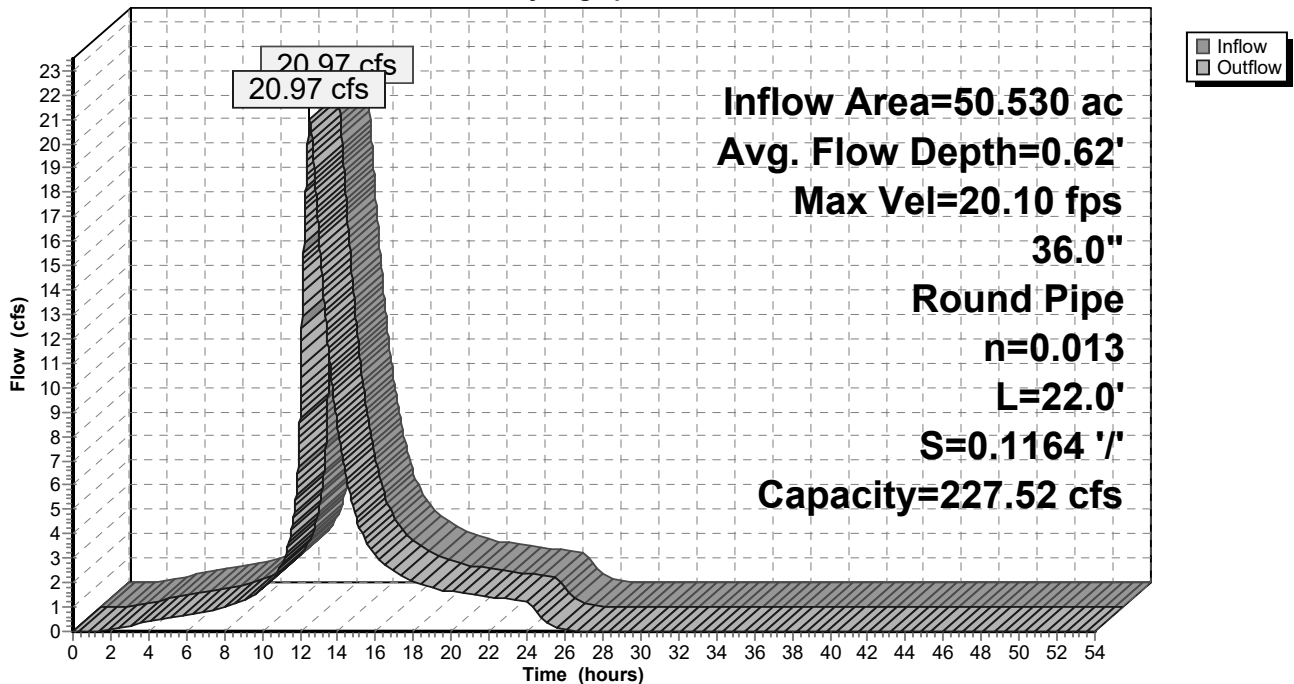
Peak Storage= 23 cf @ 12.52 hrs  
 Average Depth at Peak Storage= 0.62' , Surface Width= 2.42'  
 Bank-Full Depth= 3.00' Flow Area= 7.1 sf, Capacity= 227.52 cfs

36.0" Round Pipe  
 n= 0.013 Concrete pipe, bends & connections  
 Length= 22.0' Slope= 0.1164 '/'  
 Inlet Invert= 80.76', Outlet Invert= 78.20'



### Reach RCP: 36" RCP

Hydrograph



### Summary for Link POA-A1: POA-A1 (ROCKY BROOK)

[62] Hint: Exceeded Reach RCP OUTLET depth by 1.80' @ 0.00 hrs

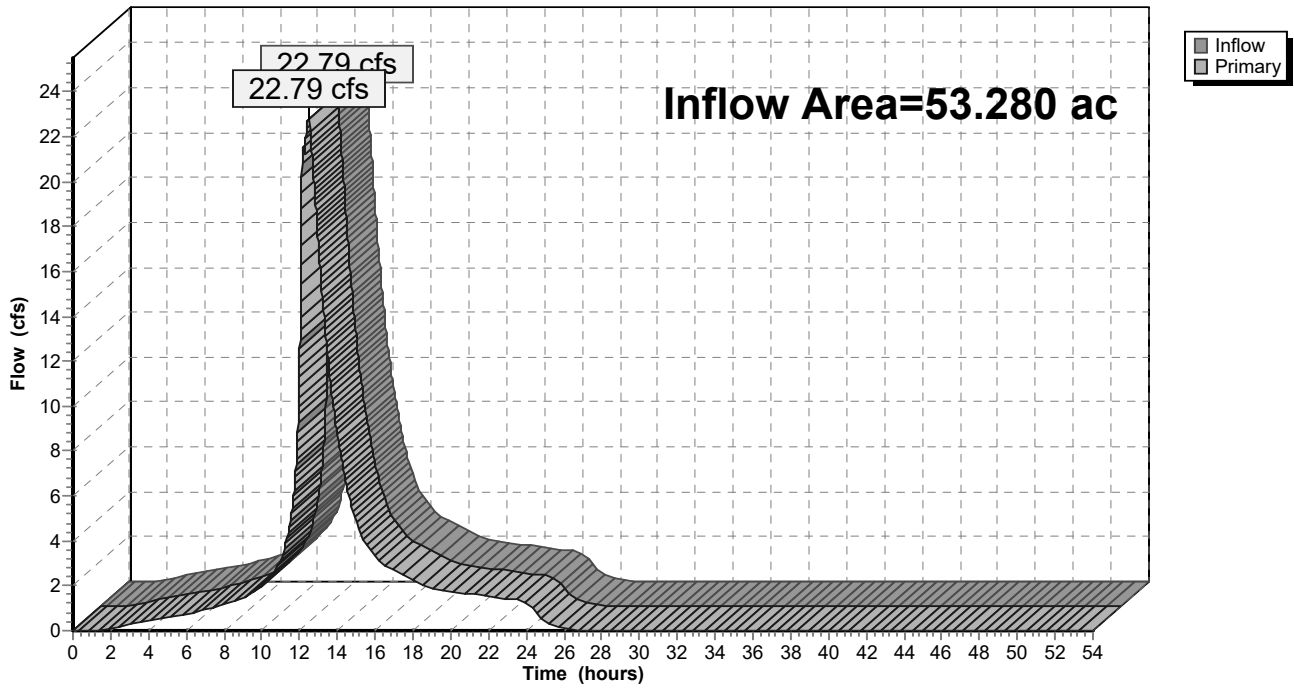
Inflow Area = 53.280 ac, 33.34% Impervious, Inflow Depth = 1.38" for 2-MER 2YR event  
Inflow = 22.79 cfs @ 12.51 hrs, Volume= 6.144 af  
Primary = 22.79 cfs @ 12.51 hrs, Volume= 6.144 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

Fixed water surface Elevation= 80.00'

### Link POA-A1: POA-A1 (ROCKY BROOK)

Hydrograph



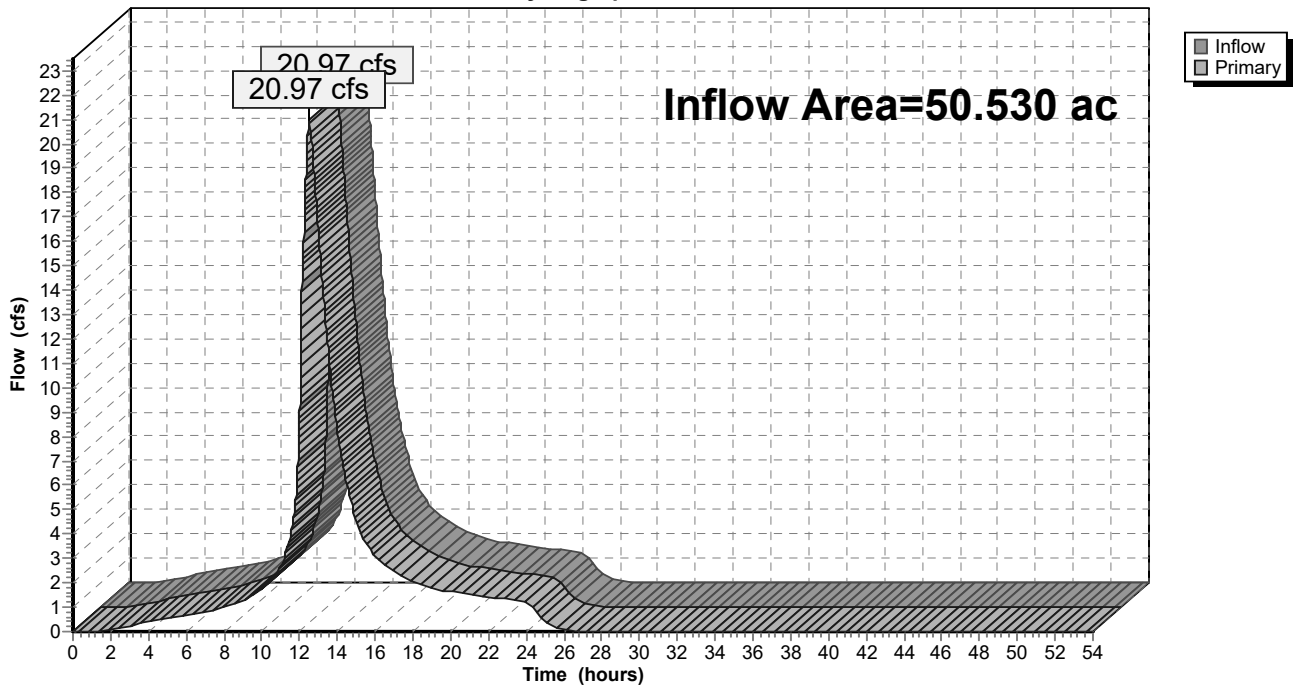
### Summary for Link POA-A1 A: POA-A1 A (36" CULVERT)

Inflow Area = 50.530 ac, 31.33% Impervious, Inflow Depth = 1.31" for 2-MER 2YR event  
Inflow = 20.97 cfs @ 12.52 hrs, Volume= 5.537 af  
Primary = 20.97 cfs @ 12.52 hrs, Volume= 5.537 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-A1 A: POA-A1 A (36" CULVERT)

Hydrograph



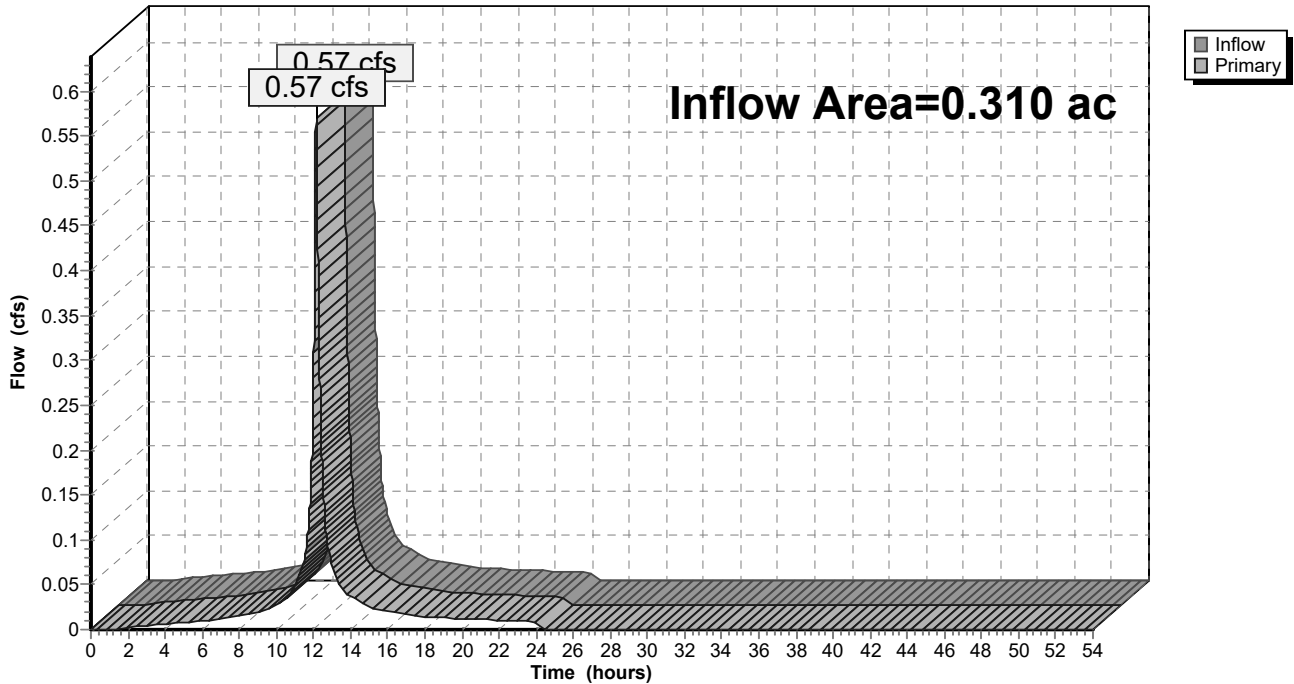
### Summary for Link POA-A2: POA-A2 (BANK ST)

Inflow Area = 0.310 ac, 65.81% Impervious, Inflow Depth = 2.12" for 2-MER 2YR event  
Inflow = 0.57 cfs @ 12.14 hrs, Volume= 0.055 af  
Primary = 0.57 cfs @ 12.14 hrs, Volume= 0.055 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-A2: POA-A2 (BANK ST)

Hydrograph



Time span=0.00-54.00 hrs, dt=0.01 hrs, 5401 points  
 Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious  
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

<b>Subcatchment EA-1: EA-1</b>	Runoff Area=0.480 ac 68.75% Impervious Runoff Depth=3.81" Tc=6.0 min CN=65/98 Runoff=1.61 cfs 0.152 af
<b>Subcatchment EA-10-OS: EA-10-OS</b>	Runoff Area=0.480 ac 31.25% Impervious Runoff Depth=3.43" Tc=6.0 min CN=79/98 Runoff=1.55 cfs 0.137 af
<b>Subcatchment EA-2: EA-2</b>	Runoff Area=1.290 ac 95.43% Impervious Runoff Depth=4.65" Tc=6.0 min CN=69/98 Runoff=5.23 cfs 0.500 af
<b>Subcatchment EA-3: EA-3</b>	Runoff Area=2.130 ac 83.57% Impervious Runoff Depth=4.43" Tc=6.0 min CN=77/98 Runoff=8.32 cfs 0.786 af
<b>Subcatchment EA-4: EA-4</b>	Runoff Area=0.200 ac 70.00% Impervious Runoff Depth=3.53" Tc=6.0 min CN=48/98 Runoff=0.60 cfs 0.059 af
<b>Subcatchment EA-5: EA-5</b>	Runoff Area=0.140 ac 0.00% Impervious Runoff Depth=4.78" Tc=6.0 min CN=98/0 Runoff=0.58 cfs 0.056 af
<b>Subcatchment EA-6-ROW: EA-6-ROW</b>	Runoff Area=0.120 ac 78.33% Impervious Runoff Depth=3.96" Tc=6.0 min CN=55/98 Runoff=0.41 cfs 0.040 af
<b>Subcatchment EA-7-ROW: EA-7-ROW</b>	Runoff Area=0.110 ac 58.18% Impervious Runoff Depth=3.36" Tc=6.0 min CN=61/98 Runoff=0.32 cfs 0.031 af
<b>Subcatchment EA-8-OS: EA-8-OS</b>	Runoff Area=46.420 ac 30.00% Impervious Runoff Depth=2.40" Flow Length=2,965' Tc=36.1 min CN=61/98 Runoff=38.27 cfs 9.291 af
<b>Subcatchment EA-9-OS: EA-9-OS</b>	Runoff Area=2.220 ac 11.26% Impervious Runoff Depth=2.29" Flow Length=500' Tc=6.7 min CN=69/98 Runoff=4.63 cfs 0.423 af
<b>Reach RCP: 36" RCP</b>	Avg. Flow Depth=0.87' Max Vel=24.54 fps Inflow=41.83 cfs 10.406 af 36.0" Round Pipe n=0.013 L=22.0' S=0.1164 '/ Capacity=227.52 cfs Outflow=41.83 cfs 10.406 af
<b>Link POA-A1: POA-A1 (ROCKY BROOK)</b>	Inflow=44.70 cfs 11.386 af Primary=44.70 cfs 11.386 af
<b>Link POA-A1 A: POA-A1 A (36" CULVERT)</b>	Inflow=41.83 cfs 10.406 af Primary=41.83 cfs 10.406 af
<b>Link POA-A2: POA-A2 (BANK ST)</b>	Inflow=0.92 cfs 0.090 af Primary=0.92 cfs 0.090 af

**Total Runoff Area = 53.590 ac Runoff Volume = 11.476 af Average Runoff Depth = 2.57"**  
**66.48% Pervious = 35.625 ac 33.52% Impervious = 17.965 ac**



**Summary for Subcatchment EA-1: EA-1**

Runoff = 1.61 cfs @ 12.14 hrs, Volume= 0.152 af, Depth= 3.81"

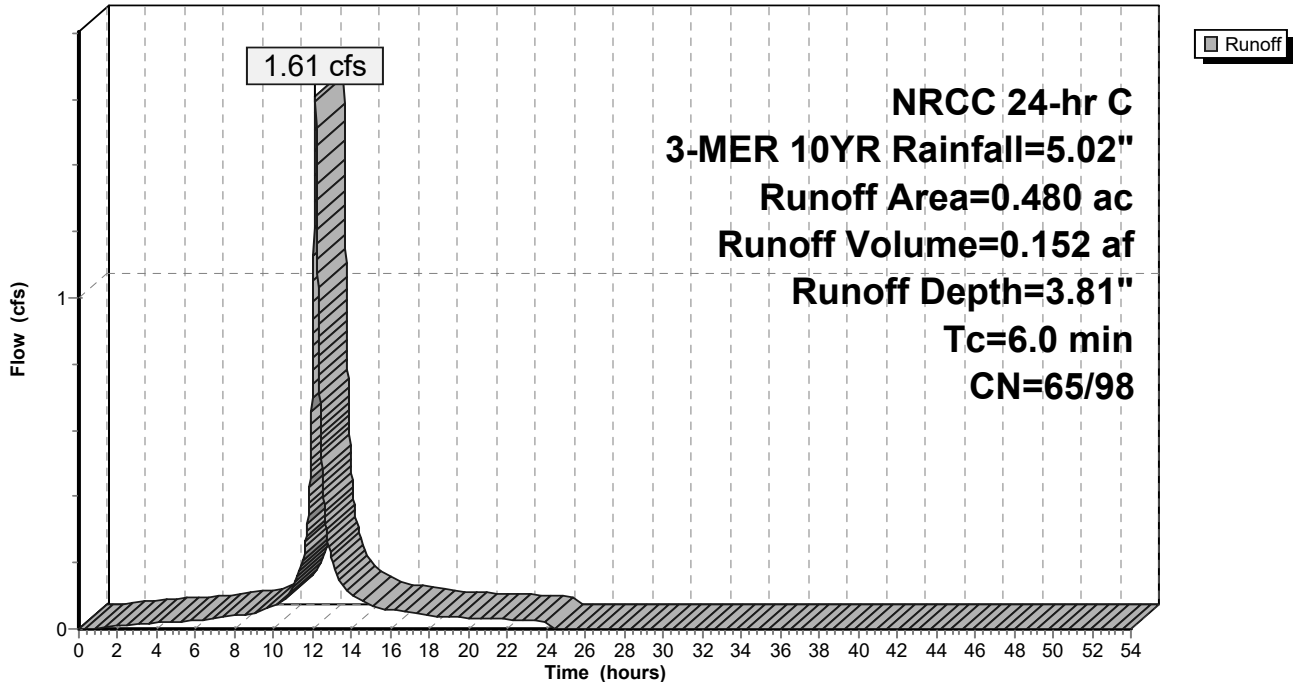
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 3-MER 10YR Rainfall=5.02"

Area (ac)	CN	Description
* 0.330	98	Roofs
* 0.030	98	Unconnected pavement
0.010	91	Gravel roads, HSG D
0.040	39	>75% Grass cover, Good, HSG A
0.070	61	>75% Grass cover, Good, HSG B
0.480	88	Weighted Average
0.150	65	31.25% Pervious Area
0.330	98	68.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EA-1: EA-1**

Hydrograph



**Summary for Subcatchment EA-10-OS: EA-10-OS**

Runoff = 1.55 cfs @ 12.14 hrs, Volume= 0.137 af, Depth= 3.43"

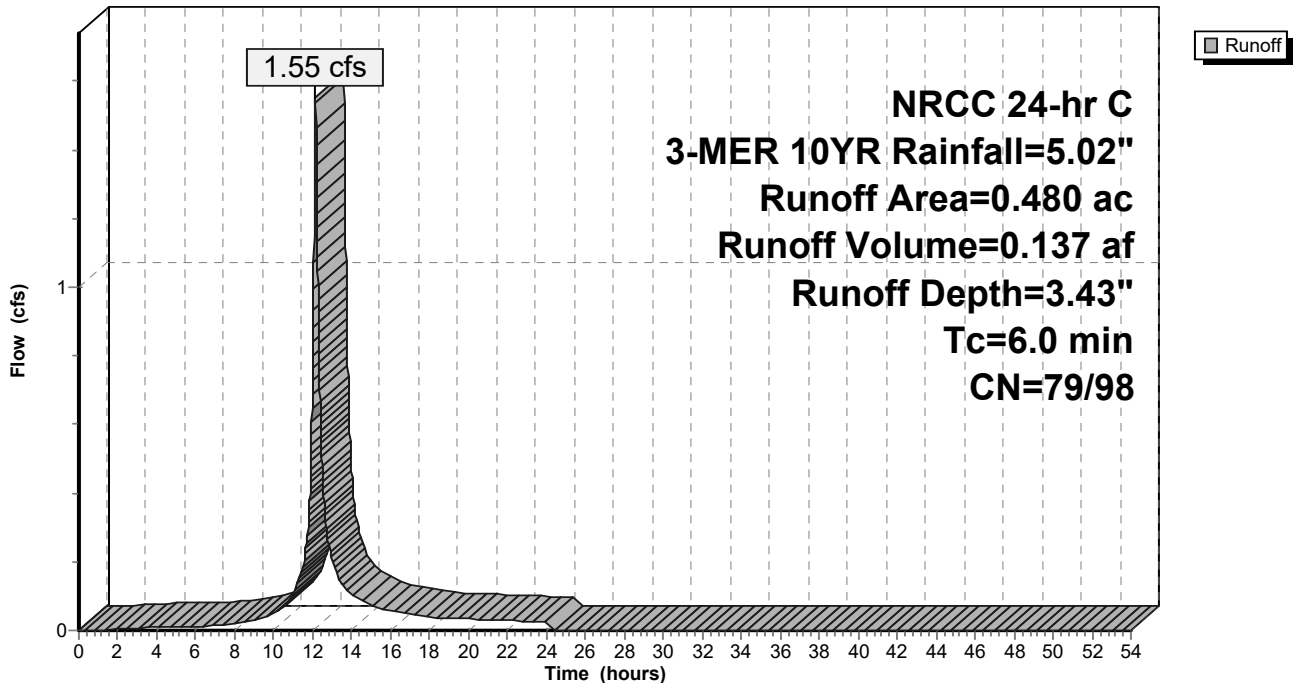
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 3-MER 10YR Rainfall=5.02"

Area (ac)	CN	Description
0.150	98	Roofs, HSG C
0.070	98	Unconnected pavement, HSG C
0.220	74	>75% Grass cover, Good, HSG C
0.040	72	Woods/grass comb., Good, HSG C
0.480	85	Weighted Average
0.330	79	68.75% Pervious Area
0.150	98	31.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EA-10-OS: EA-10-OS**

Hydrograph



**Summary for Subcatchment EA-2: EA-2**

Runoff = 5.23 cfs @ 12.14 hrs, Volume= 0.500 af, Depth= 4.65"

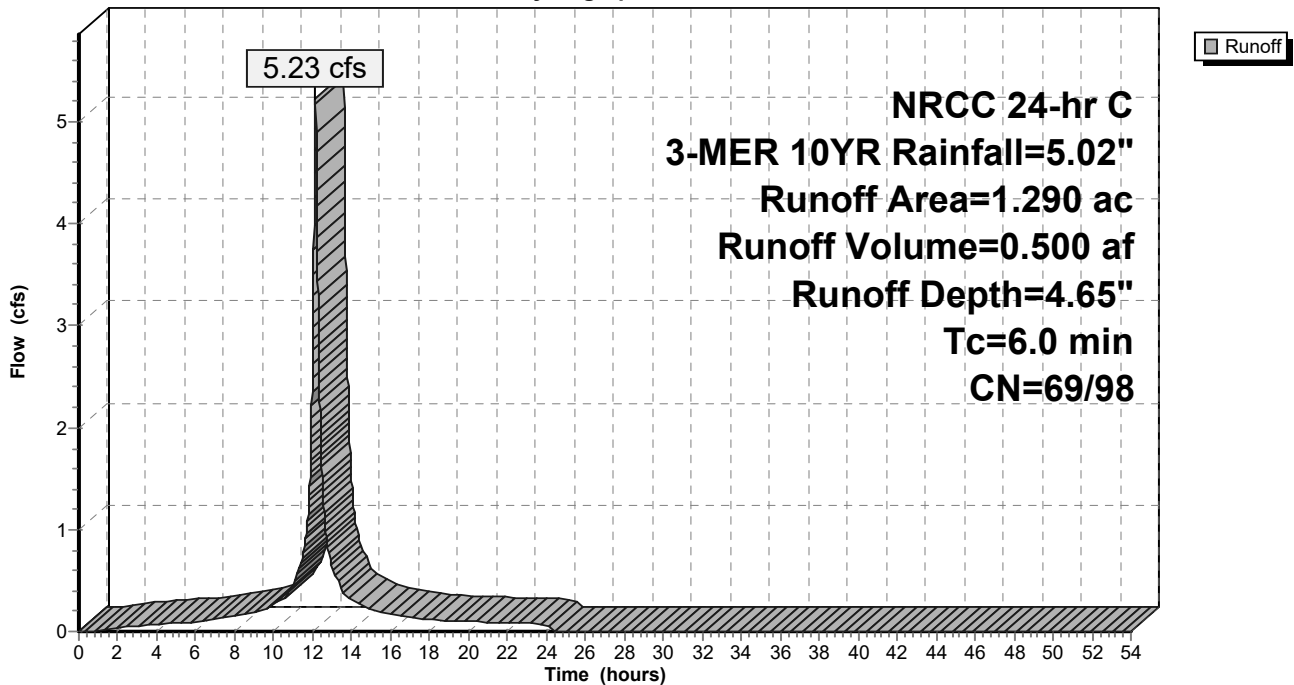
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 3-MER 10YR Rainfall=5.02"

Area (ac)	CN	Description
* 0.581	98	Roofs
* 0.010	98	Unconnected pavement
* 0.650	98	Paved parking
0.015	76	Gravel roads, HSG A
0.022	73	Brush, Good, HSG D
0.012	30	Brush, Good, HSG A
1.290	97	Weighted Average
0.059	69	4.57% Pervious Area
1.231	98	95.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EA-2: EA-2**

Hydrograph



**Summary for Subcatchment EA-3: EA-3**

Runoff = 8.32 cfs @ 12.14 hrs, Volume= 0.786 af, Depth= 4.43"

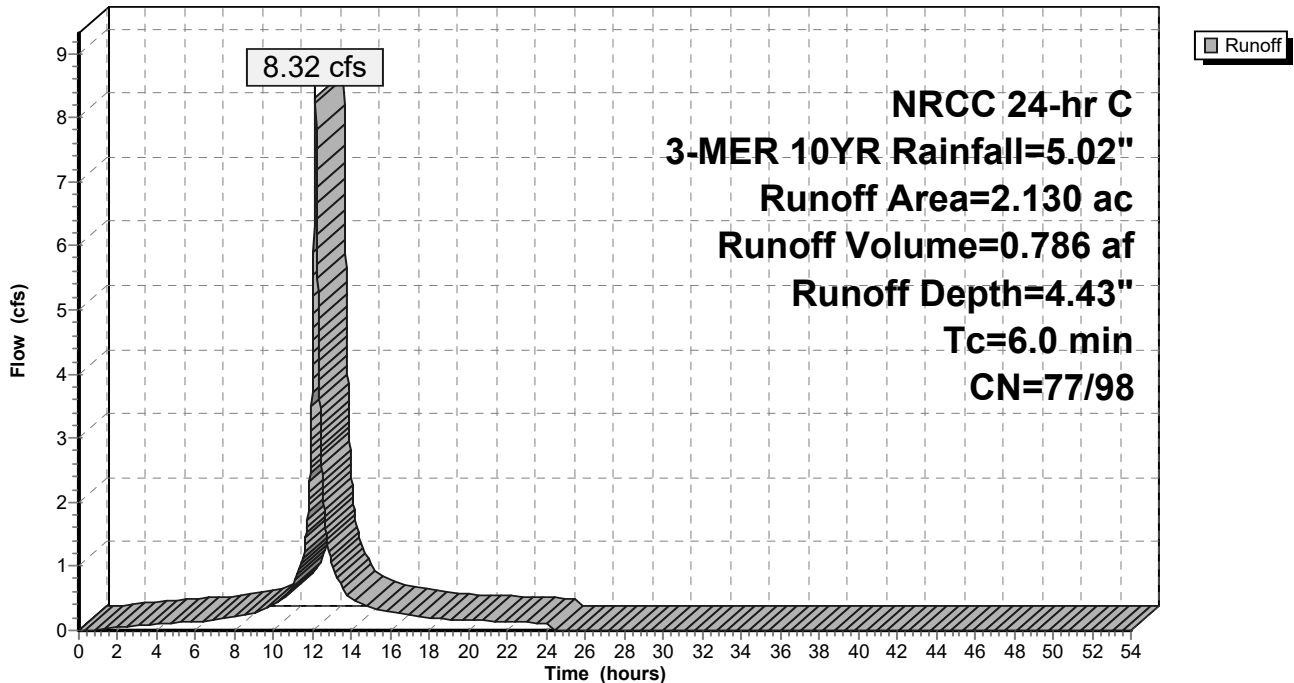
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 3-MER 10YR Rainfall=5.02"

Area (ac)	CN	Description
* 0.420	98	Roofs
* 0.050	98	Unconnected pavement
* 1.360	98	Paved parking
0.300	73	Brush, Good, HSG D
2.130	94	Weighted Average
0.350	77	16.43% Pervious Area
1.780	98	83.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EA-3: EA-3**

Hydrograph



**Summary for Subcatchment EA-4: EA-4**

Runoff = 0.60 cfs @ 12.14 hrs, Volume= 0.059 af, Depth= 3.53"

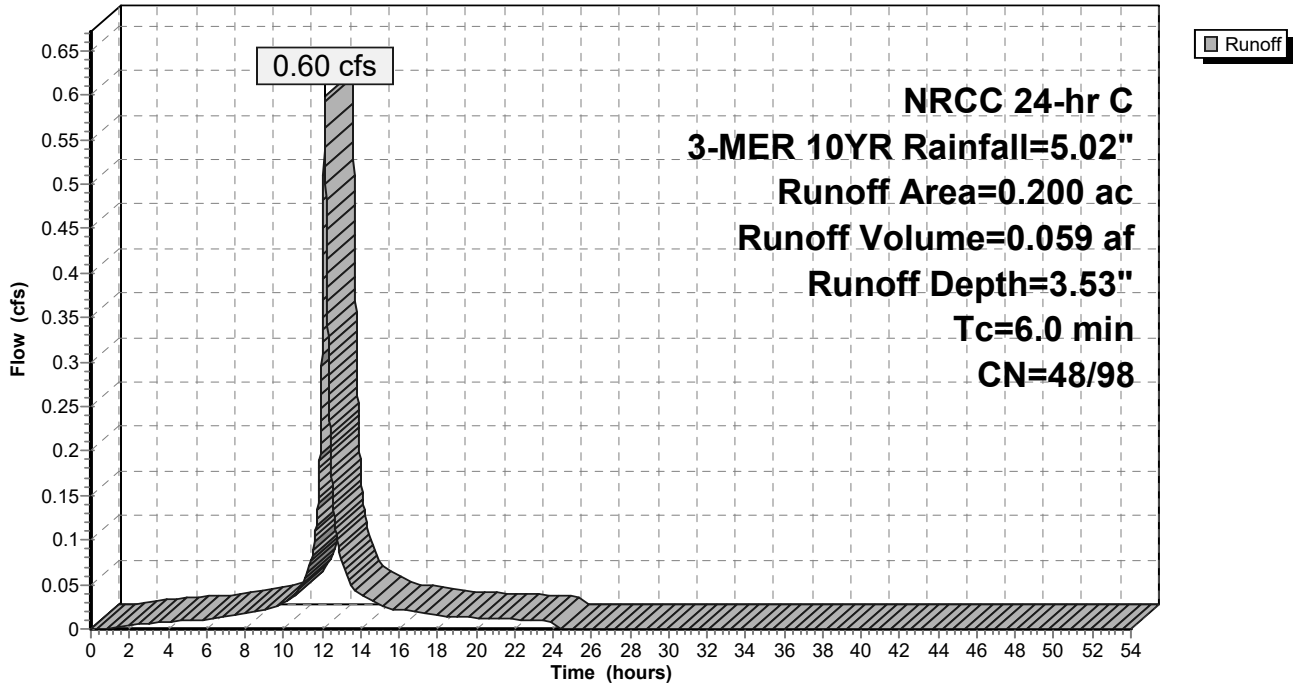
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 3-MER 10YR Rainfall=5.02"

Area (ac)	CN	Description
0.140	98	Roofs, HSG C
0.020	61	>75% Grass cover, Good, HSG B
0.009	39	>75% Grass cover, Good, HSG A
0.010	30	Brush, Good, HSG A
0.021	48	Brush, Good, HSG B
0.200	83	Weighted Average
0.060	48	30.00% Pervious Area
0.140	98	70.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EA-4: EA-4**

Hydrograph



**Summary for Subcatchment EA-5: EA-5**

Runoff = 0.58 cfs @ 12.14 hrs, Volume= 0.056 af, Depth= 4.78"

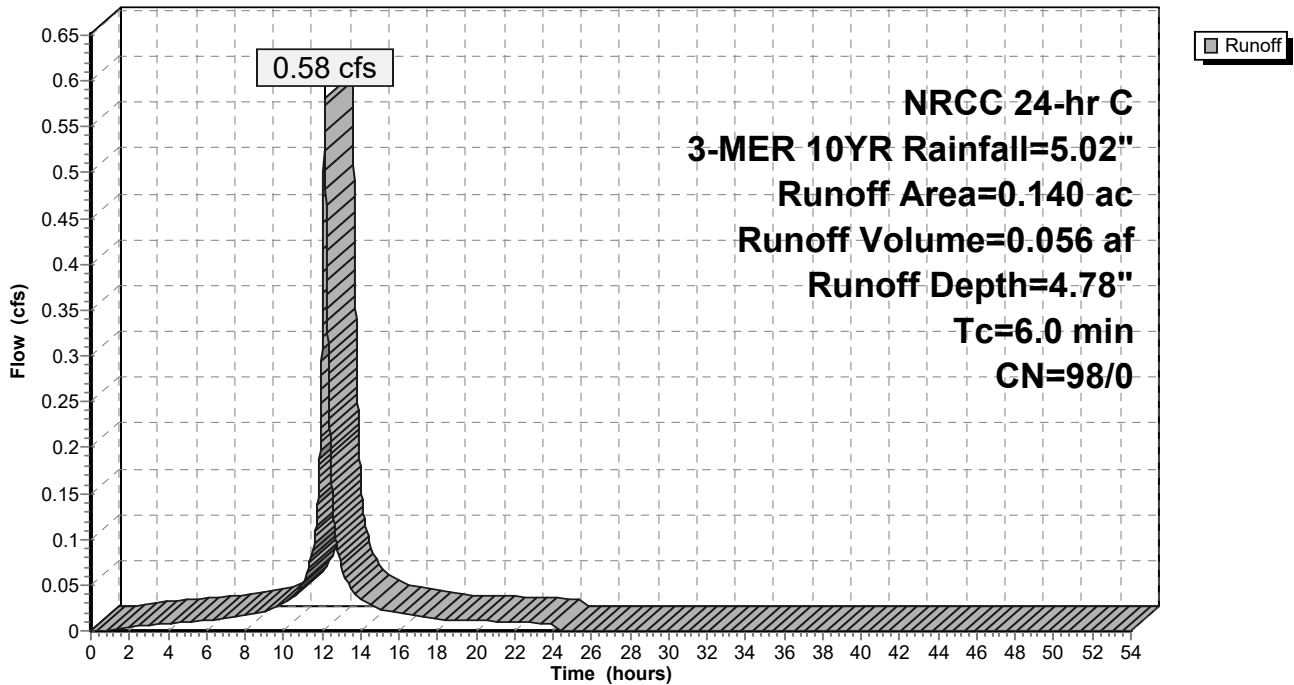
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 3-MER 10YR Rainfall=5.02"

Area (ac)	CN	Description
0.140	98	Unconnected roofs, HSG D
0.140	98	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EA-5: EA-5**

Hydrograph



**Summary for Subcatchment EA-6-ROW: EA-6-ROW**

Runoff = 0.41 cfs @ 12.14 hrs, Volume= 0.040 af, Depth= 3.96"

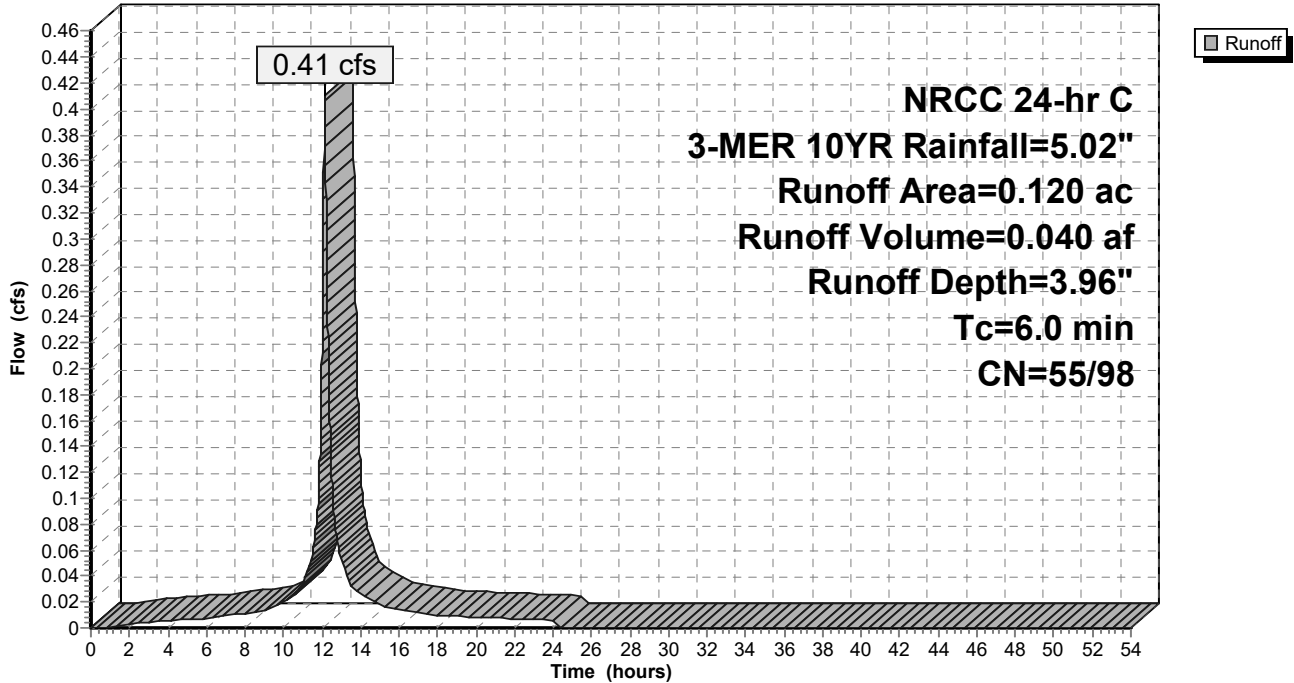
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 3-MER 10YR Rainfall=5.02"

Area (ac)	CN	Description
0.007	39	>75% Grass cover, Good, HSG A
0.019	61	>75% Grass cover, Good, HSG B
0.094	98	Paved roads w/curbs & sewers, HSG D
0.120	89	Weighted Average
0.026	55	21.67% Pervious Area
0.094	98	78.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EA-6-ROW: EA-6-ROW**

Hydrograph



**Summary for Subcatchment EA-7-ROW: EA-7-ROW**

Runoff = 0.32 cfs @ 12.14 hrs, Volume= 0.031 af, Depth= 3.36"

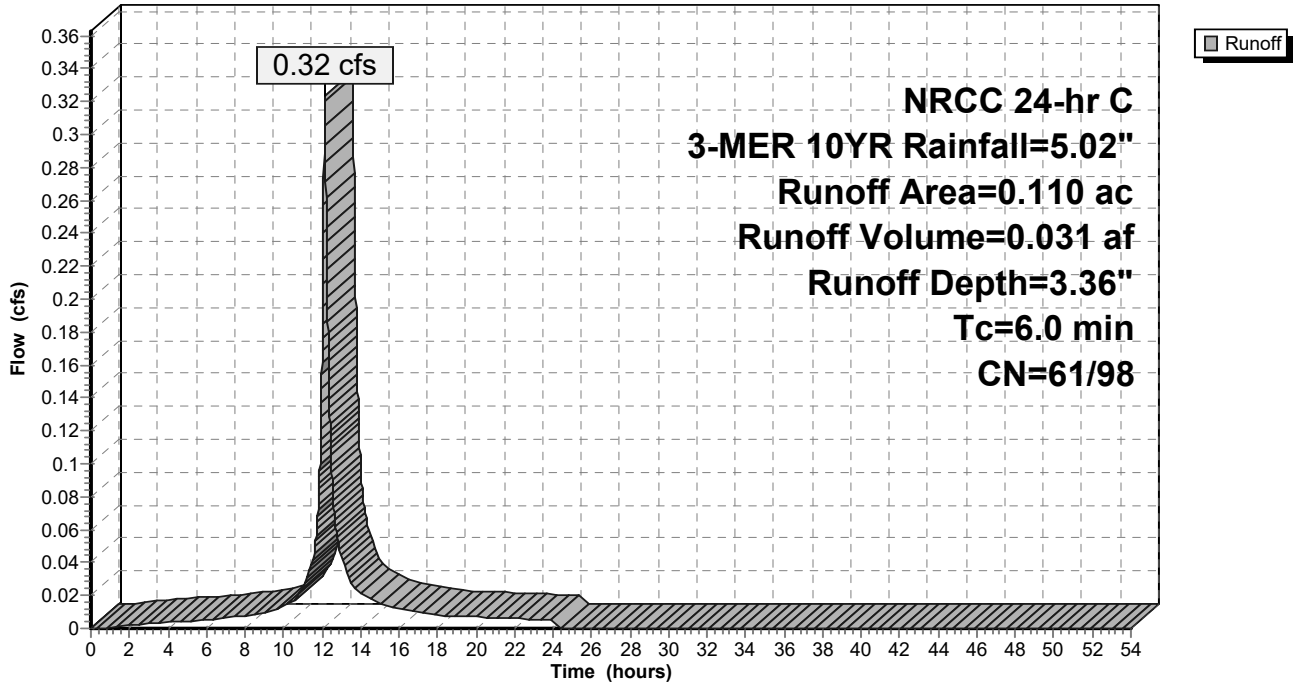
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 3-MER 10YR Rainfall=5.02"

Area (ac)	CN	Description
0.016	39	>75% Grass cover, Good, HSG A
0.012	61	>75% Grass cover, Good, HSG B
0.018	80	>75% Grass cover, Good, HSG D
0.064	98	Paved roads w/curbs & sewers, HSG D
0.110	82	Weighted Average
0.046	61	41.82% Pervious Area
0.064	98	58.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EA-7-ROW: EA-7-ROW**

Hydrograph





**Summary for Subcatchment EA-8-OS: EA-8-OS**

Runoff = 38.27 cfs @ 12.52 hrs, Volume= 9.291 af, Depth= 2.40"

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 3-MER 10YR Rainfall=5.02"

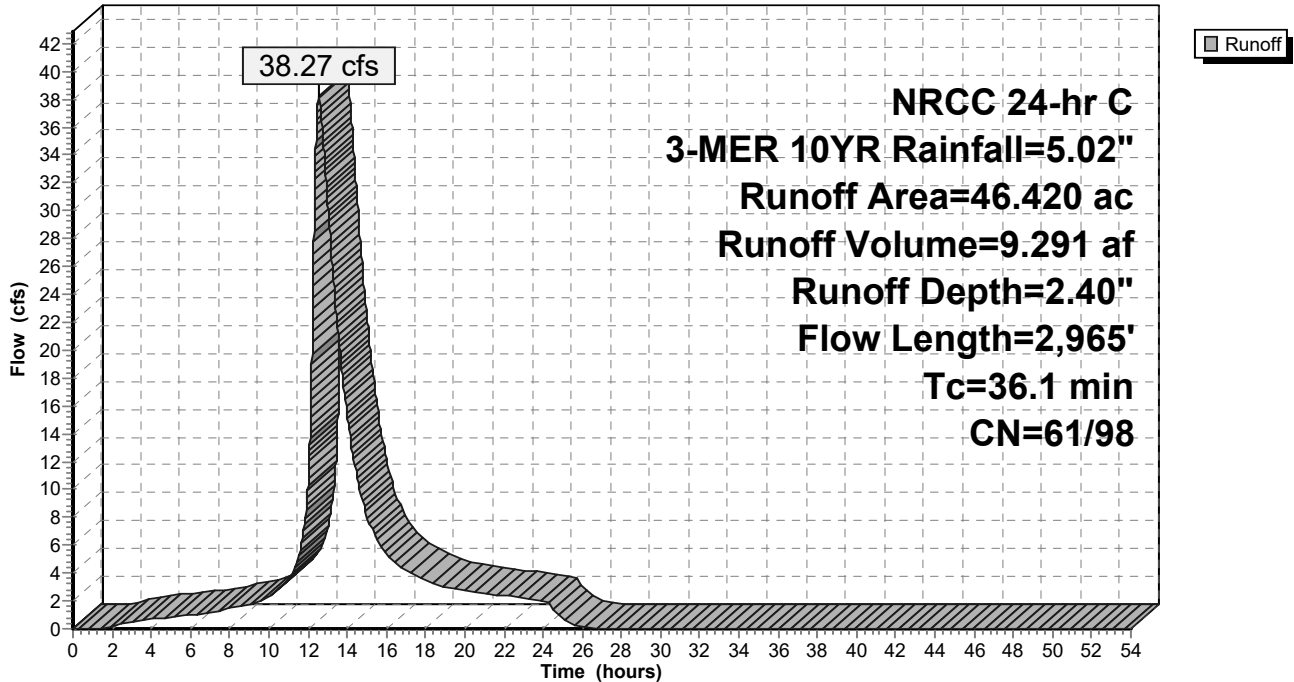
Area (ac)	CN	Description
46.420	72	1/3 acre lots, 30% imp, HSG B
32.494	61	70.00% Pervious Area
13.926	98	30.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.7	100	0.0100	0.13		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.31"
3.9	370	0.0060	1.57		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
17.5	2,100		2.00		<b>Direct Entry, Pipe Flow</b>
2.0	395	0.0170	3.22	57.93	<b>Trap/Vee/Rect Channel Flow,</b> Bot.W=4.50' D=2.00' Z= 2.0 & 2.5 ' Top.W=13.50' n= 0.070
36.1	2,965	Total			

**Subcatchment EA-8-OS: EA-8-OS**

Hydrograph



**Summary for Subcatchment EA-9-OS: EA-9-OS**

Runoff = 4.63 cfs @ 12.15 hrs, Volume= 0.423 af, Depth= 2.29"

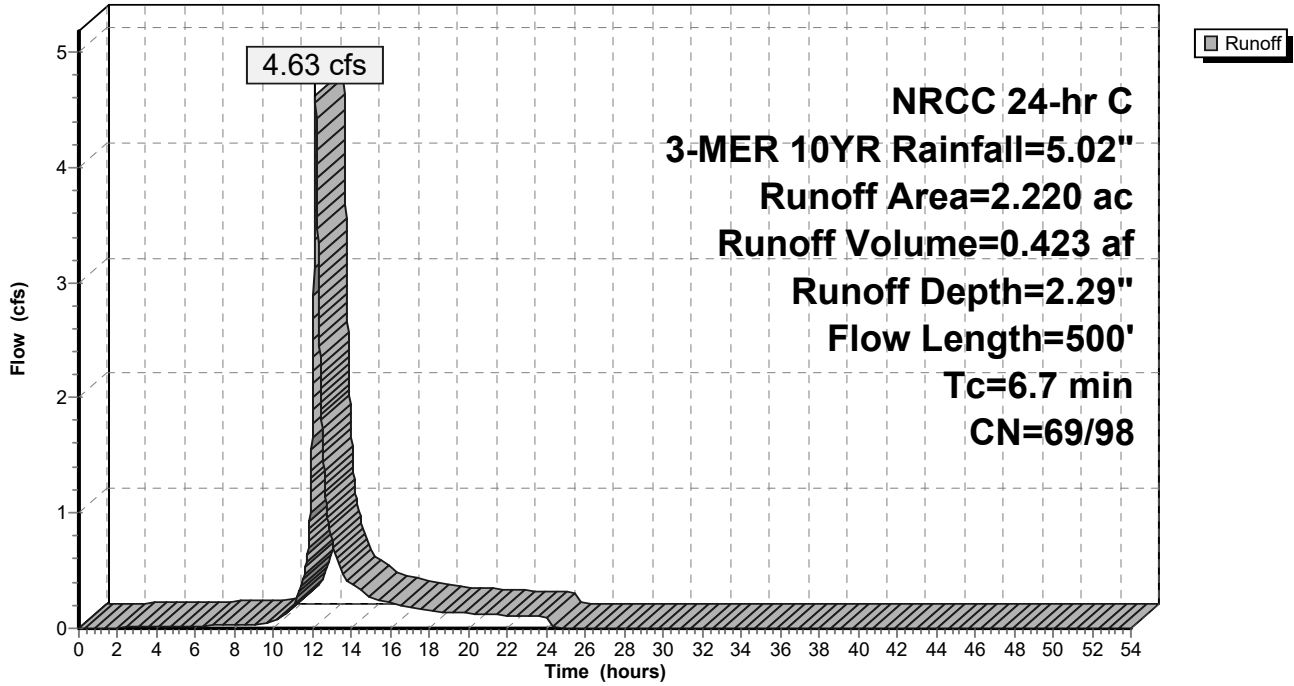
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 3-MER 10YR Rainfall=5.02"

Area (ac)	CN	Description
0.250	98	Roofs, HSG C
0.140	98	Unconnected pavement, HSG C
0.430	80	>75% Grass cover, Good, HSG D
0.870	61	>75% Grass cover, Good, HSG B
0.270	58	Woods/grass comb., Good, HSG B
0.050	79	Woods/grass comb., Good, HSG D
0.210	73	Brush, Good, HSG D
2.220	72	Weighted Average
1.970	69	88.74% Pervious Area
0.250	98	11.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	70	0.0900	0.29		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.31"
1.5	190	0.0900	2.10		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
1.2	240	0.0170	3.22	57.93	<b>Trap/Vee/Rect Channel Flow,</b> Bot.W=4.50' D=2.00' Z= 2.0 & 2.5 '/' Top.W=13.50' n= 0.070
6.7	500	Total			

Subcatchment EA-9-OS: EA-9-OS

Hydrograph



### Summary for Reach RCP: 36" RCP

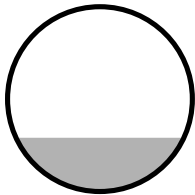
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 50.530 ac, 31.33% Impervious, Inflow Depth = 2.47" for 3-MER 10YR event  
 Inflow = 41.83 cfs @ 12.52 hrs, Volume= 10.406 af  
 Outflow = 41.83 cfs @ 12.52 hrs, Volume= 10.406 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs  
 Max. Velocity= 24.54 fps, Min. Travel Time= 0.0 min  
 Avg. Velocity = 10.55 fps, Avg. Travel Time= 0.0 min

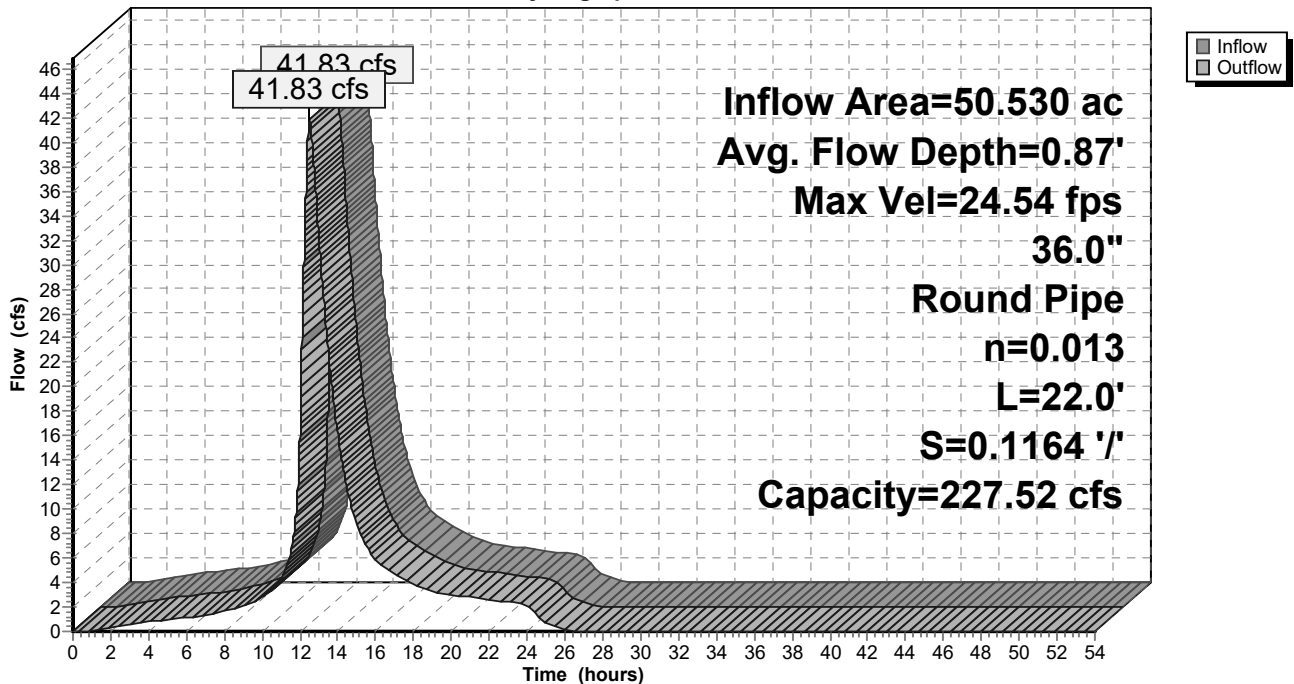
Peak Storage= 38 cf @ 12.52 hrs  
 Average Depth at Peak Storage= 0.87' , Surface Width= 2.72'  
 Bank-Full Depth= 3.00' Flow Area= 7.1 sf, Capacity= 227.52 cfs

36.0" Round Pipe  
 n= 0.013 Concrete pipe, bends & connections  
 Length= 22.0' Slope= 0.1164 '/'  
 Inlet Invert= 80.76', Outlet Invert= 78.20'



### Reach RCP: 36" RCP

Hydrograph



### Summary for Link POA-A1: POA-A1 (ROCKY BROOK)

[62] Hint: Exceeded Reach RCP OUTLET depth by 1.80' @ 0.00 hrs

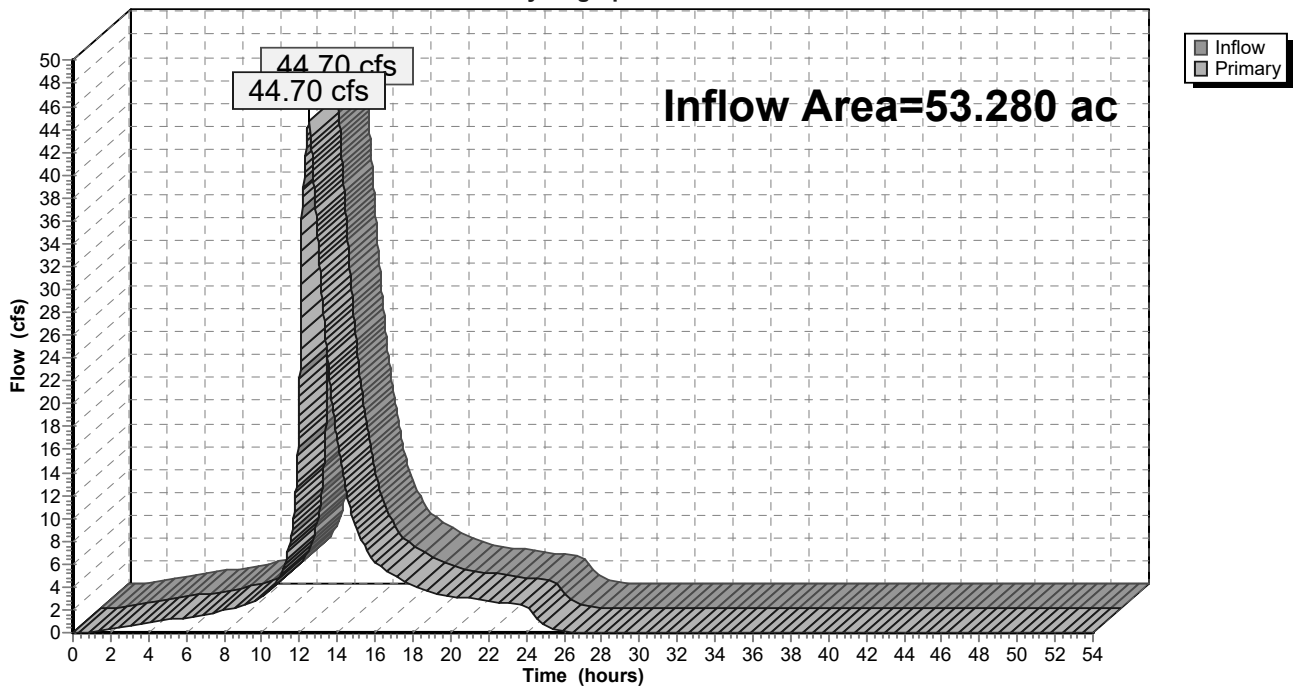
Inflow Area = 53.280 ac, 33.34% Impervious, Inflow Depth = 2.56" for 3-MER 10YR event  
Inflow = 44.70 cfs @ 12.51 hrs, Volume= 11.386 af  
Primary = 44.70 cfs @ 12.51 hrs, Volume= 11.386 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

Fixed water surface Elevation= 80.00'

### Link POA-A1: POA-A1 (ROCKY BROOK)

Hydrograph

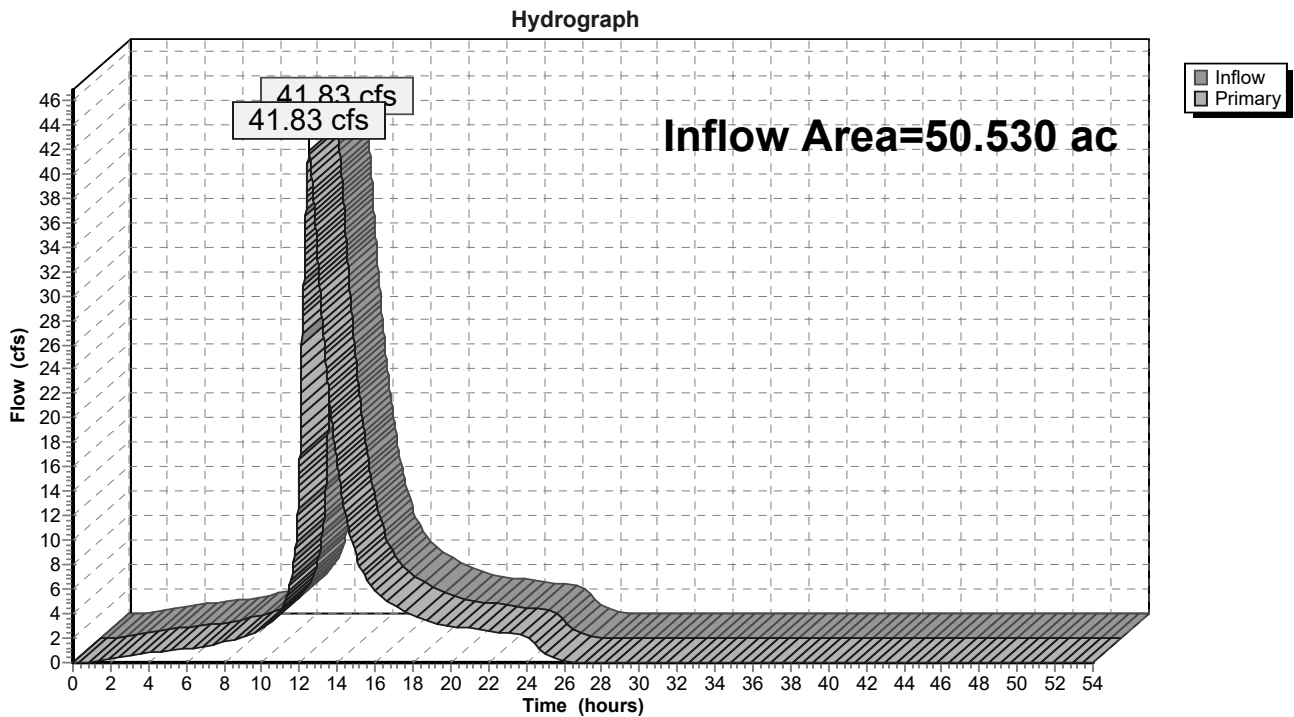


### Summary for Link POA-A1 A: POA-A1 A (36" CULVERT)

Inflow Area = 50.530 ac, 31.33% Impervious, Inflow Depth = 2.47" for 3-MER 10YR event  
Inflow = 41.83 cfs @ 12.52 hrs, Volume= 10.406 af  
Primary = 41.83 cfs @ 12.52 hrs, Volume= 10.406 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-A1 A: POA-A1 A (36" CULVERT)

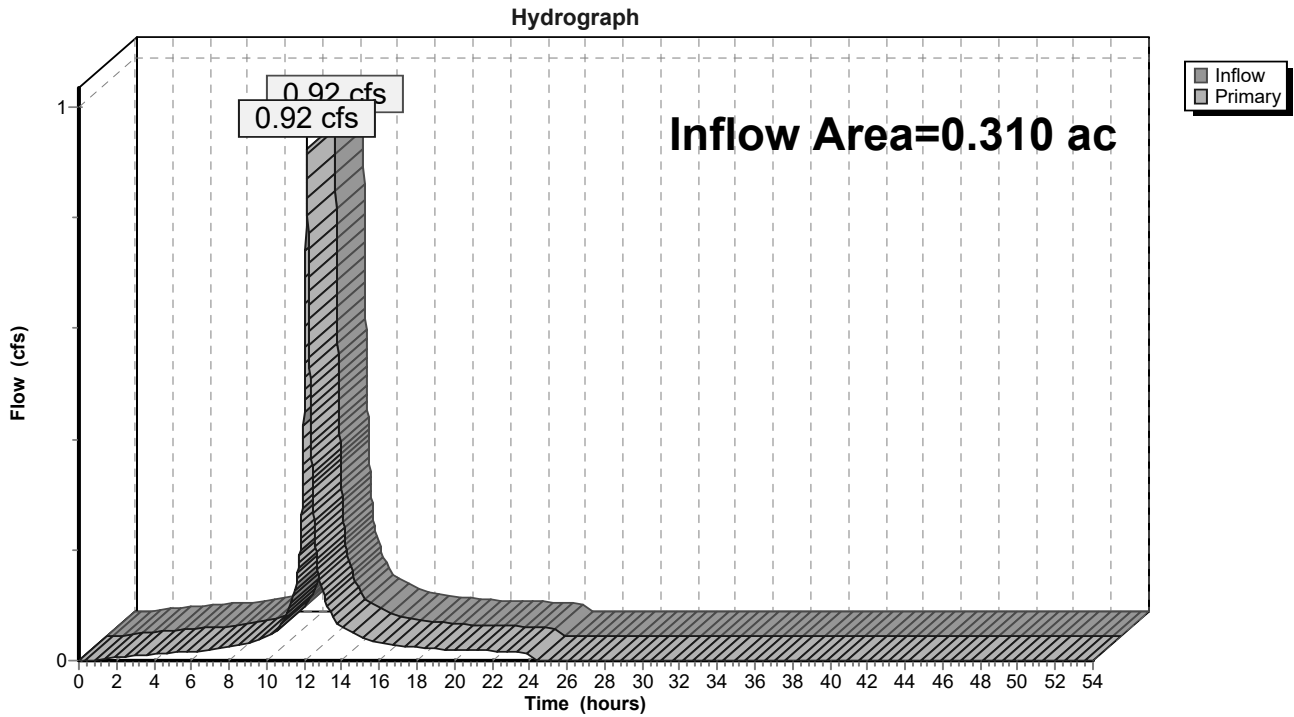


### Summary for Link POA-A2: POA-A2 (BANK ST)

Inflow Area = 0.310 ac, 65.81% Impervious, Inflow Depth = 3.47" for 3-MER 10YR event  
Inflow = 0.92 cfs @ 12.14 hrs, Volume= 0.090 af  
Primary = 0.92 cfs @ 12.14 hrs, Volume= 0.090 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-A2: POA-A2 (BANK ST)



Time span=0.00-54.00 hrs, dt=0.01 hrs, 5401 points  
 Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious  
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

<b>Subcatchment EA-1: EA-1</b>	Runoff Area=0.480 ac 68.75% Impervious Runoff Depth=4.88" Tc=6.0 min CN=65/98 Runoff=2.07 cfs 0.195 af
<b>Subcatchment EA-10-OS: EA-10-OS</b>	Runoff Area=0.480 ac 31.25% Impervious Runoff Depth=4.52" Tc=6.0 min CN=79/98 Runoff=2.04 cfs 0.181 af
<b>Subcatchment EA-2: EA-2</b>	Runoff Area=1.290 ac 95.43% Impervious Runoff Depth=5.82" Tc=6.0 min CN=69/98 Runoff=6.50 cfs 0.626 af
<b>Subcatchment EA-3: EA-3</b>	Runoff Area=2.130 ac 83.57% Impervious Runoff Depth=5.58" Tc=6.0 min CN=77/98 Runoff=10.43 cfs 0.991 af
<b>Subcatchment EA-4: EA-4</b>	Runoff Area=0.200 ac 70.00% Impervious Runoff Depth=4.50" Tc=6.0 min CN=48/98 Runoff=0.77 cfs 0.075 af
<b>Subcatchment EA-5: EA-5</b>	Runoff Area=0.140 ac 0.00% Impervious Runoff Depth=5.96" Tc=6.0 min CN=98/0 Runoff=0.72 cfs 0.070 af
<b>Subcatchment EA-6-ROW: EA-6-ROW</b>	Runoff Area=0.120 ac 78.33% Impervious Runoff Depth=5.02" Tc=6.0 min CN=55/98 Runoff=0.52 cfs 0.050 af
<b>Subcatchment EA-7-ROW: EA-7-ROW</b>	Runoff Area=0.110 ac 58.18% Impervious Runoff Depth=4.36" Tc=6.0 min CN=61/98 Runoff=0.42 cfs 0.040 af
<b>Subcatchment EA-8-OS: EA-8-OS</b>	Runoff Area=46.420 ac 30.00% Impervious Runoff Depth=3.29" Flow Length=2,965' Tc=36.1 min CN=61/98 Runoff=53.83 cfs 12.715 af
<b>Subcatchment EA-9-OS: EA-9-OS</b>	Runoff Area=2.220 ac 11.26% Impervious Runoff Depth=3.22" Flow Length=500' Tc=6.7 min CN=69/98 Runoff=6.60 cfs 0.595 af
<b>Reach RCP: 36" RCP</b>	Avg. Flow Depth=1.04' Max Vel=26.97 fps Inflow=58.51 cfs 14.181 af 36.0" Round Pipe n=0.013 L=22.0' S=0.1164 '/ Capacity=227.52 cfs Outflow=58.51 cfs 14.181 af
<b>Link POA-A1: POA-A1 (ROCKY BROOK)</b>	Inflow=62.12 cfs 15.422 af Primary=62.12 cfs 15.422 af
<b>Link POA-A1 A: POA-A1 A (36" CULVERT)</b>	Inflow=58.51 cfs 14.181 af Primary=58.51 cfs 14.181 af
<b>Link POA-A2: POA-A2 (BANK ST)</b>	Inflow=1.19 cfs 0.115 af Primary=1.19 cfs 0.115 af

**Total Runoff Area = 53.590 ac Runoff Volume = 15.537 af Average Runoff Depth = 3.48"**  
**66.48% Pervious = 35.625 ac 33.52% Impervious = 17.965 ac**



**Summary for Subcatchment EA-1: EA-1**

Runoff = 2.07 cfs @ 12.14 hrs, Volume= 0.195 af, Depth= 4.88"

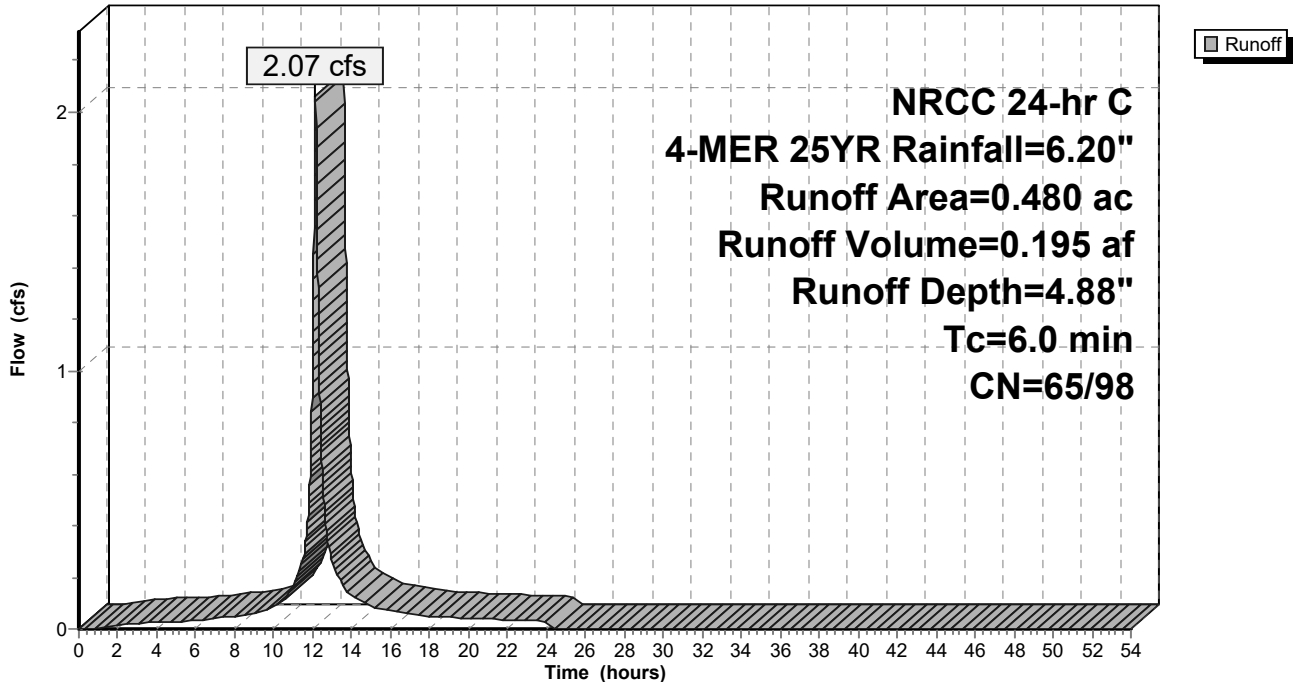
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 4-MER 25YR Rainfall=6.20"

Area (ac)	CN	Description
* 0.330	98	Roofs
* 0.030	98	Unconnected pavement
0.010	91	Gravel roads, HSG D
0.040	39	>75% Grass cover, Good, HSG A
0.070	61	>75% Grass cover, Good, HSG B
0.480	88	Weighted Average
0.150	65	31.25% Pervious Area
0.330	98	68.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EA-1: EA-1**

Hydrograph



**Summary for Subcatchment EA-10-OS: EA-10-OS**

Runoff = 2.04 cfs @ 12.14 hrs, Volume= 0.181 af, Depth= 4.52"

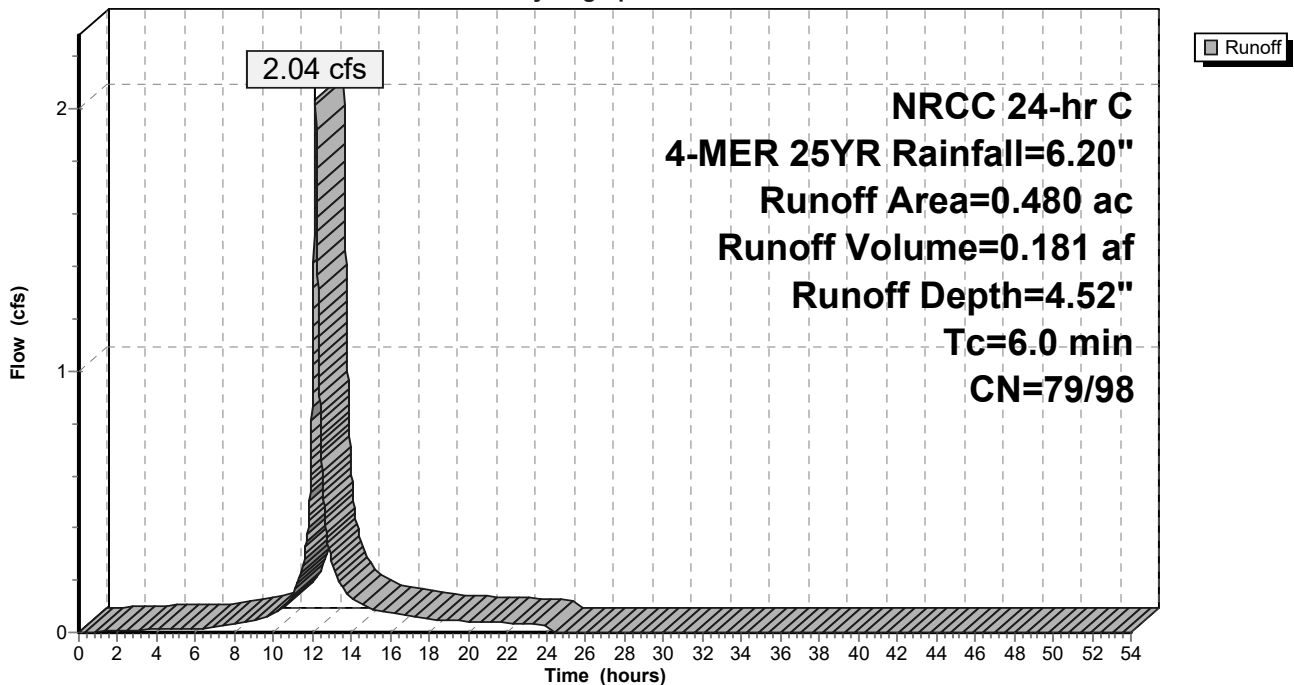
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 4-MER 25YR Rainfall=6.20"

Area (ac)	CN	Description
0.150	98	Roofs, HSG C
0.070	98	Unconnected pavement, HSG C
0.220	74	>75% Grass cover, Good, HSG C
0.040	72	Woods/grass comb., Good, HSG C
0.480	85	Weighted Average
0.330	79	68.75% Pervious Area
0.150	98	31.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EA-10-OS: EA-10-OS**

Hydrograph



**Summary for Subcatchment EA-2: EA-2**

Runoff = 6.50 cfs @ 12.14 hrs, Volume= 0.626 af, Depth= 5.82"

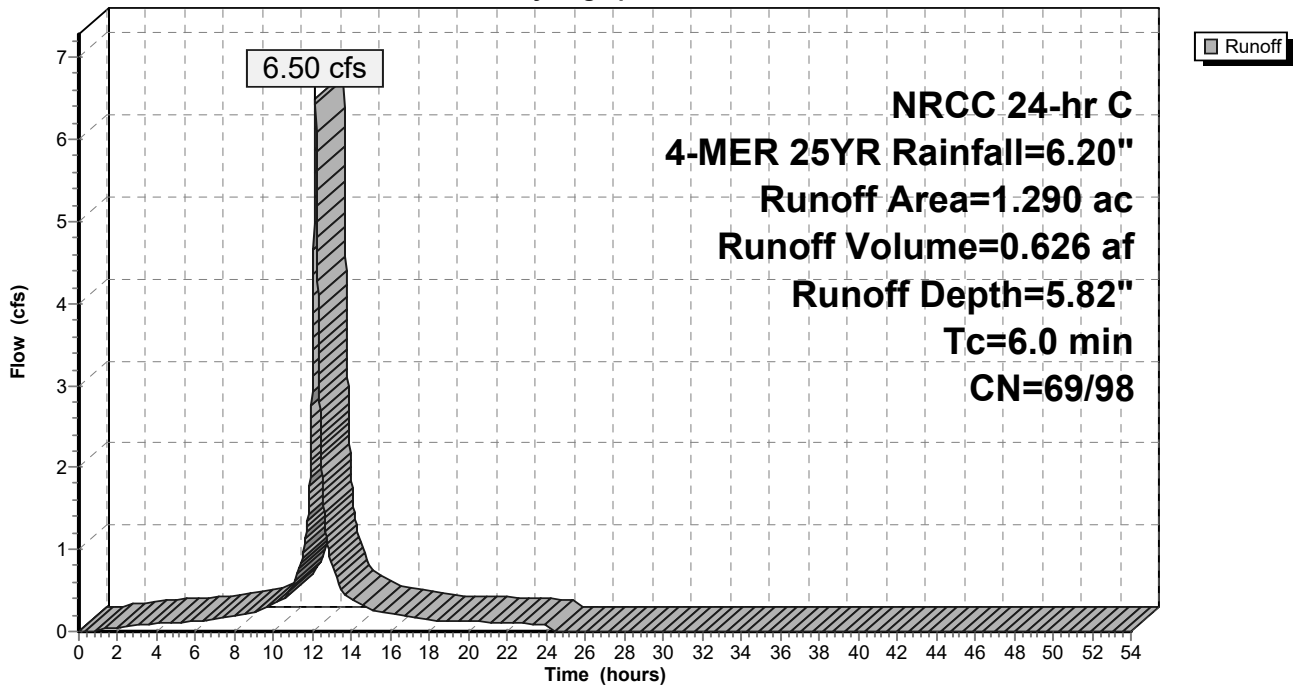
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 4-MER 25YR Rainfall=6.20"

Area (ac)	CN	Description
* 0.581	98	Roofs
* 0.010	98	Unconnected pavement
* 0.650	98	Paved parking
0.015	76	Gravel roads, HSG A
0.022	73	Brush, Good, HSG D
0.012	30	Brush, Good, HSG A
1.290	97	Weighted Average
0.059	69	4.57% Pervious Area
1.231	98	95.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EA-2: EA-2**

Hydrograph



**Summary for Subcatchment EA-3: EA-3**

Runoff = 10.43 cfs @ 12.14 hrs, Volume= 0.991 af, Depth= 5.58"

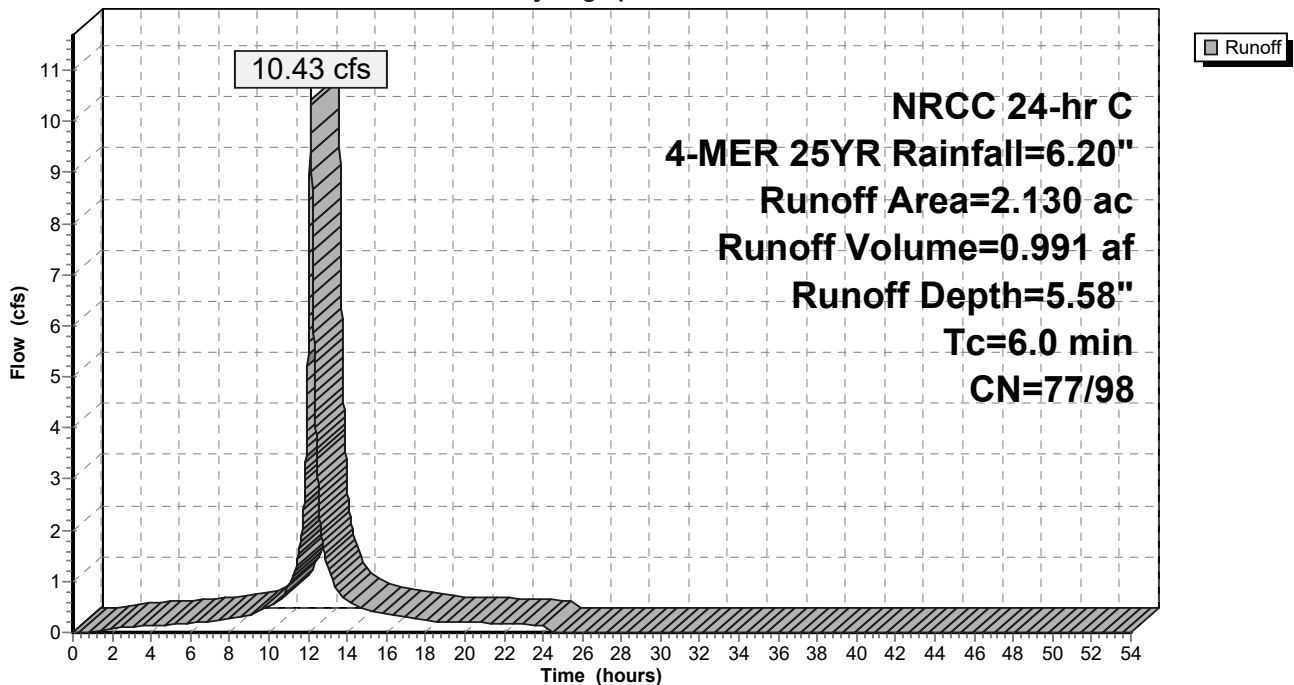
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 4-MER 25YR Rainfall=6.20"

Area (ac)	CN	Description
* 0.420	98	Roofs
* 0.050	98	Unconnected pavement
* 1.360	98	Paved parking
0.300	73	Brush, Good, HSG D
2.130	94	Weighted Average
0.350	77	16.43% Pervious Area
1.780	98	83.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EA-3: EA-3**

Hydrograph



**Summary for Subcatchment EA-4: EA-4**

Runoff = 0.77 cfs @ 12.14 hrs, Volume= 0.075 af, Depth= 4.50"

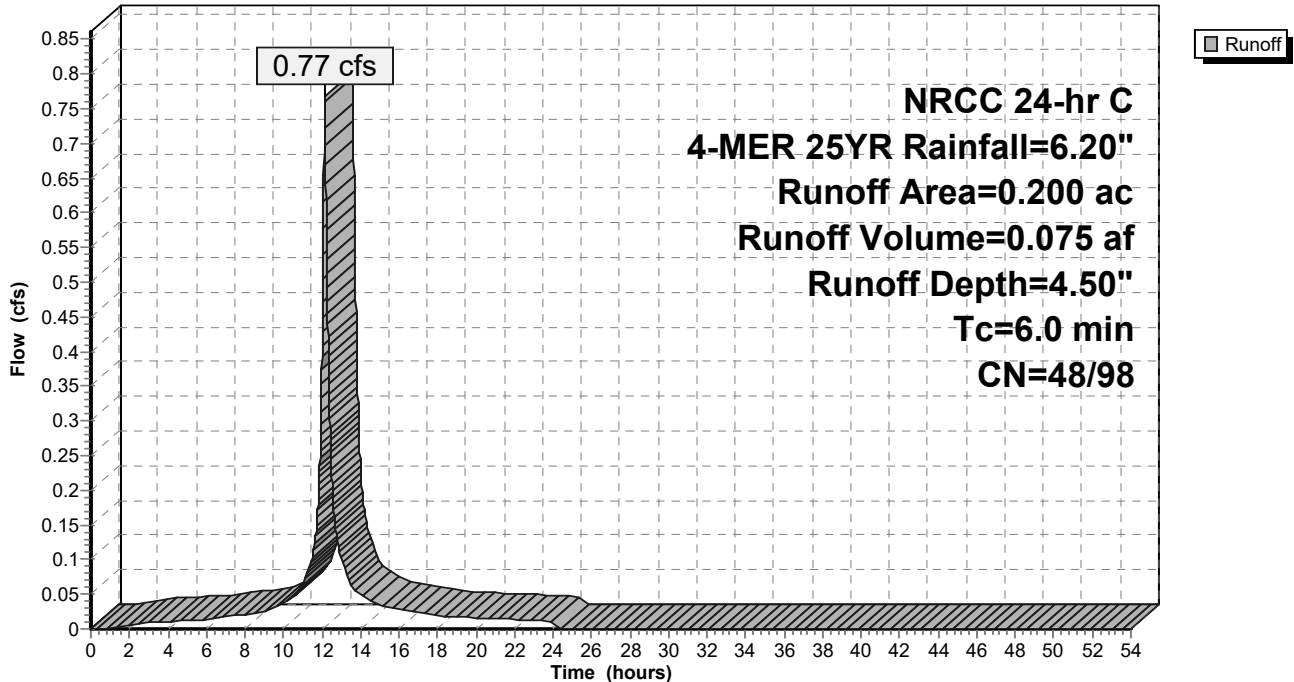
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 4-MER 25YR Rainfall=6.20"

Area (ac)	CN	Description
0.140	98	Roofs, HSG C
0.020	61	>75% Grass cover, Good, HSG B
0.009	39	>75% Grass cover, Good, HSG A
0.010	30	Brush, Good, HSG A
0.021	48	Brush, Good, HSG B
0.200	83	Weighted Average
0.060	48	30.00% Pervious Area
0.140	98	70.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EA-4: EA-4**

Hydrograph



**Summary for Subcatchment EA-5: EA-5**

Runoff = 0.72 cfs @ 12.14 hrs, Volume= 0.070 af, Depth= 5.96"

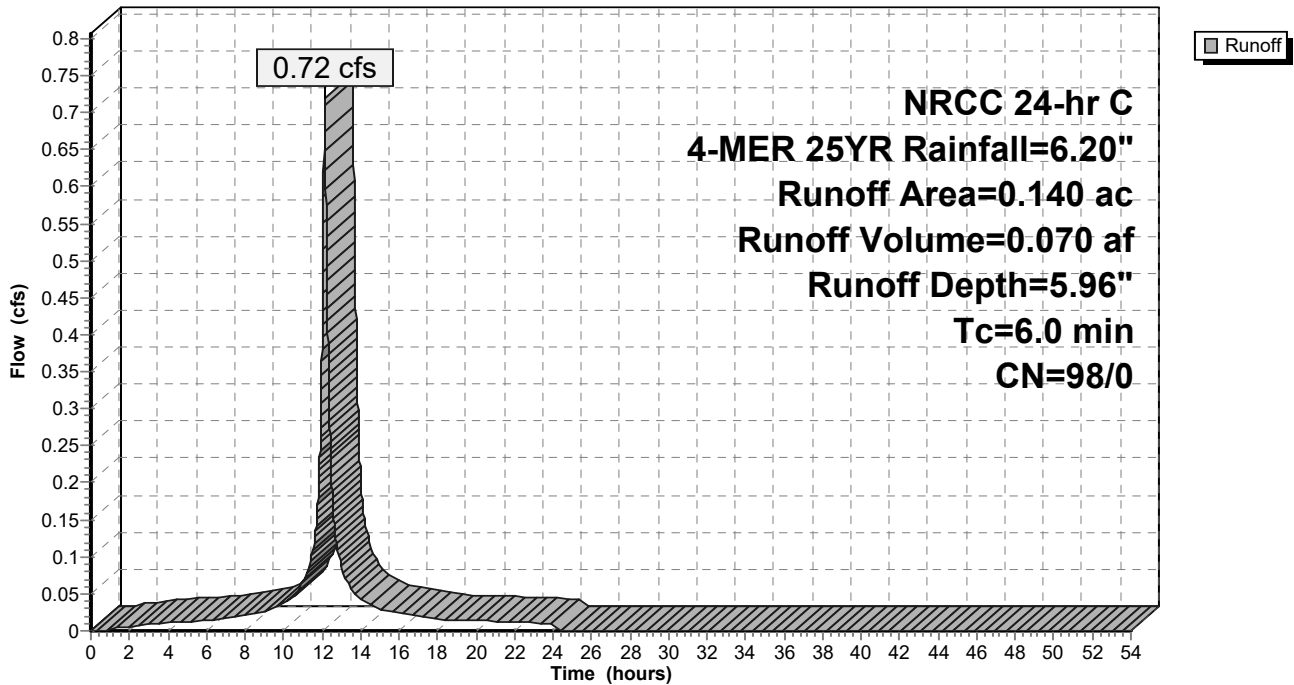
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 4-MER 25YR Rainfall=6.20"

Area (ac)	CN	Description
0.140	98	Unconnected roofs, HSG D
0.140	98	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EA-5: EA-5**

Hydrograph



**Summary for Subcatchment EA-6-ROW: EA-6-ROW**

Runoff = 0.52 cfs @ 12.14 hrs, Volume= 0.050 af, Depth= 5.02"

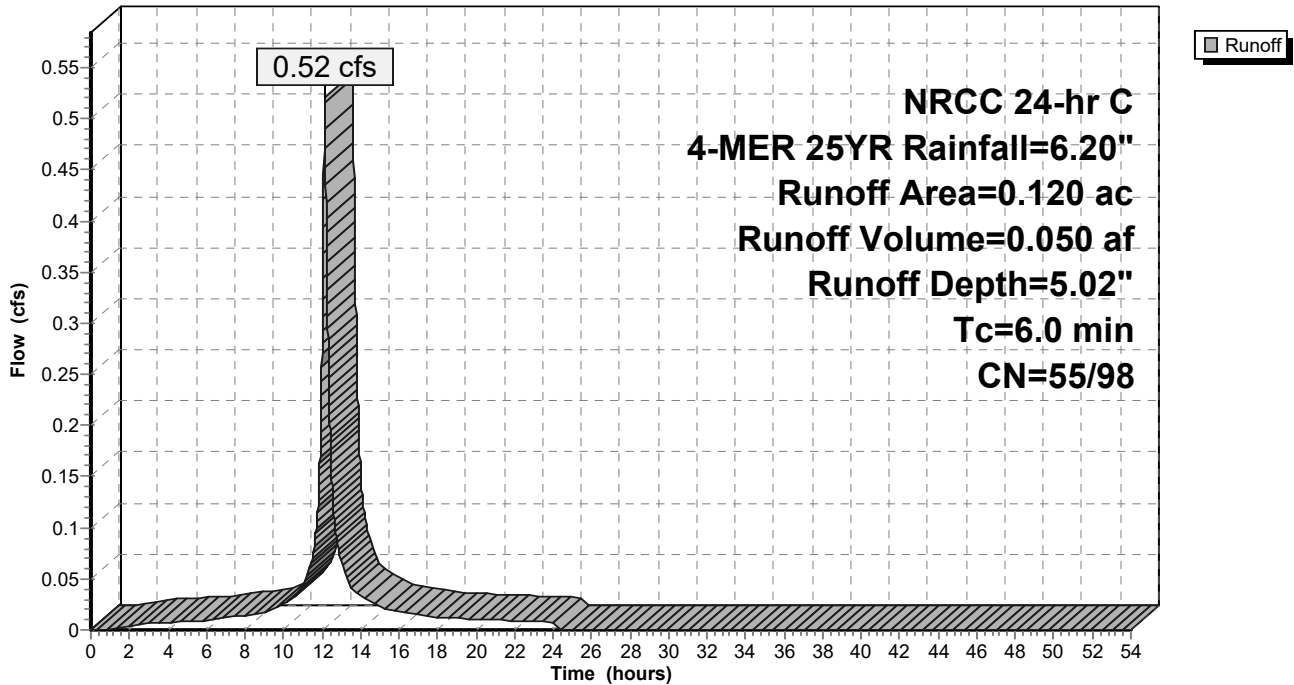
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 4-MER 25YR Rainfall=6.20"

Area (ac)	CN	Description
0.007	39	>75% Grass cover, Good, HSG A
0.019	61	>75% Grass cover, Good, HSG B
0.094	98	Paved roads w/curbs & sewers, HSG D
0.120	89	Weighted Average
0.026	55	21.67% Pervious Area
0.094	98	78.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EA-6-ROW: EA-6-ROW**

Hydrograph



**Summary for Subcatchment EA-7-ROW: EA-7-ROW**

Runoff = 0.42 cfs @ 12.14 hrs, Volume= 0.040 af, Depth= 4.36"

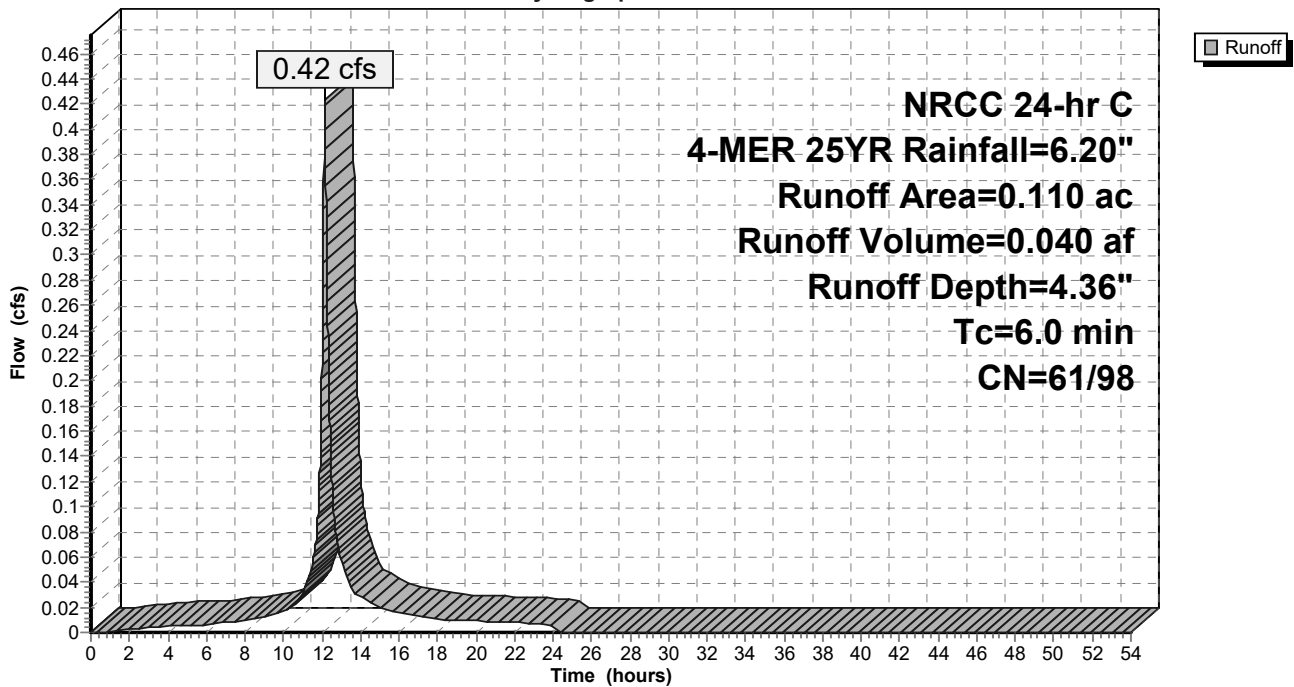
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 4-MER 25YR Rainfall=6.20"

Area (ac)	CN	Description
0.016	39	>75% Grass cover, Good, HSG A
0.012	61	>75% Grass cover, Good, HSG B
0.018	80	>75% Grass cover, Good, HSG D
0.064	98	Paved roads w/curbs & sewers, HSG D
0.110	82	Weighted Average
0.046	61	41.82% Pervious Area
0.064	98	58.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EA-7-ROW: EA-7-ROW**

Hydrograph





**Summary for Subcatchment EA-8-OS: EA-8-OS**

Runoff = 53.83 cfs @ 12.52 hrs, Volume= 12.715 af, Depth= 3.29"

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 4-MER 25YR Rainfall=6.20"

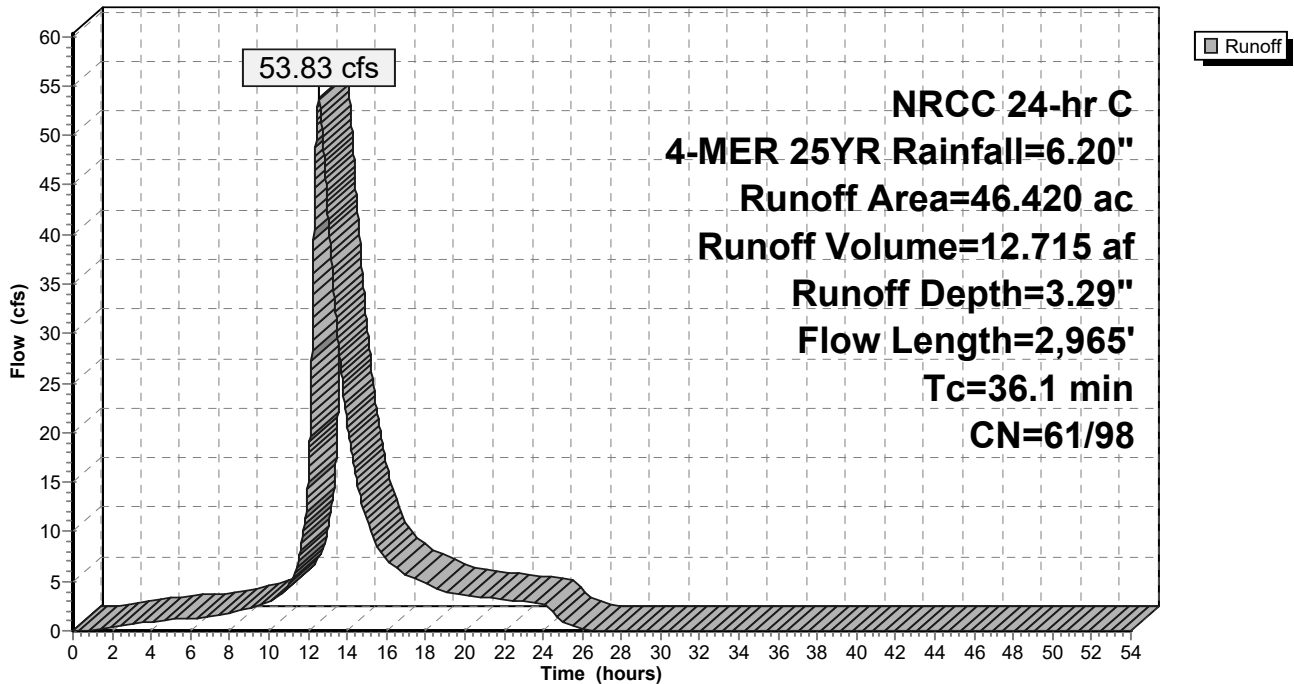
Area (ac)	CN	Description
46.420	72	1/3 acre lots, 30% imp, HSG B
32.494	61	70.00% Pervious Area
13.926	98	30.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.7	100	0.0100	0.13		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.31"
3.9	370	0.0060	1.57		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
17.5	2,100		2.00		<b>Direct Entry, Pipe Flow</b>
2.0	395	0.0170	3.22	57.93	<b>Trap/Vee/Rect Channel Flow,</b> Bot.W=4.50' D=2.00' Z= 2.0 & 2.5 '/' Top.W=13.50' n= 0.070
36.1	2,965	Total			

**Subcatchment EA-8-OS: EA-8-OS**

Hydrograph



**Summary for Subcatchment EA-9-OS: EA-9-OS**

Runoff = 6.60 cfs @ 12.15 hrs, Volume= 0.595 af, Depth= 3.22"

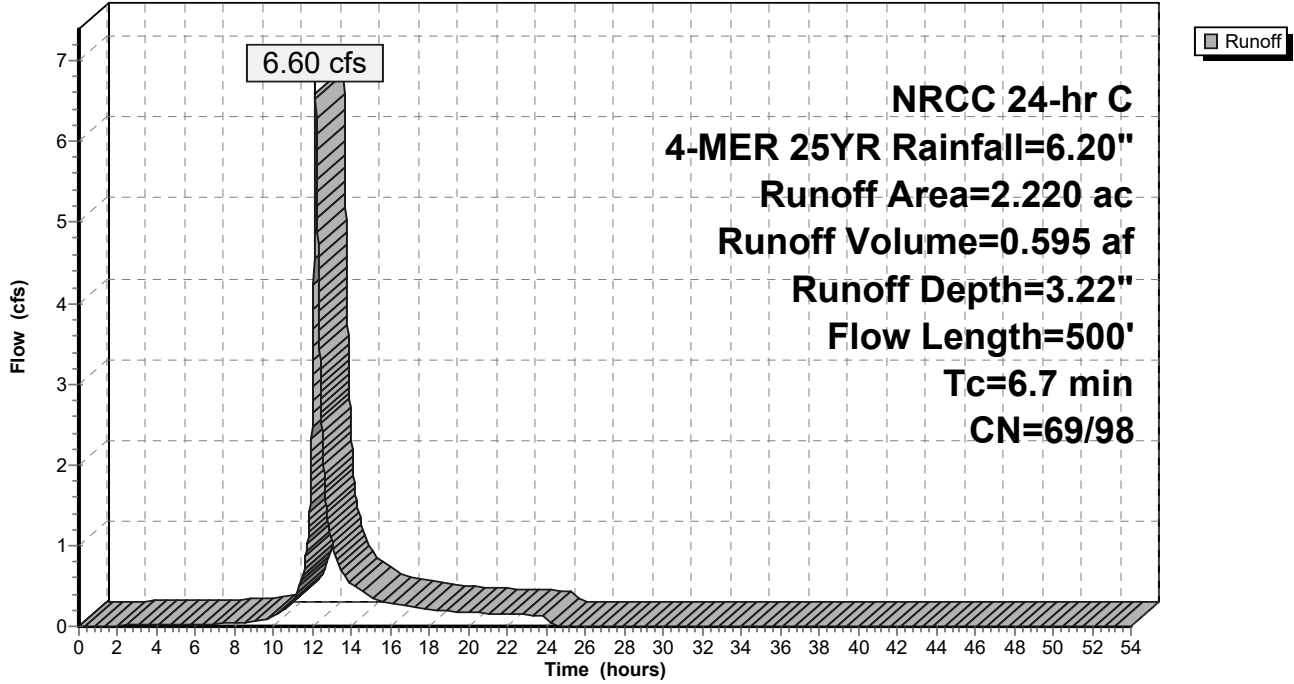
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 4-MER 25YR Rainfall=6.20"

Area (ac)	CN	Description
0.250	98	Roofs, HSG C
0.140	98	Unconnected pavement, HSG C
0.430	80	>75% Grass cover, Good, HSG D
0.870	61	>75% Grass cover, Good, HSG B
0.270	58	Woods/grass comb., Good, HSG B
0.050	79	Woods/grass comb., Good, HSG D
0.210	73	Brush, Good, HSG D
2.220	72	Weighted Average
1.970	69	88.74% Pervious Area
0.250	98	11.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	70	0.0900	0.29		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.31"
1.5	190	0.0900	2.10		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
1.2	240	0.0170	3.22	57.93	<b>Trap/Vee/Rect Channel Flow,</b> Bot.W=4.50' D=2.00' Z= 2.0 & 2.5 ' Top.W=13.50' n= 0.070
6.7	500	Total			

Subcatchment EA-9-OS: EA-9-OS

Hydrograph



### Summary for Reach RCP: 36" RCP

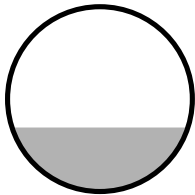
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 50.530 ac, 31.33% Impervious, Inflow Depth = 3.37" for 4-MER 25YR event  
 Inflow = 58.51 cfs @ 12.52 hrs, Volume= 14.181 af  
 Outflow = 58.51 cfs @ 12.52 hrs, Volume= 14.181 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs  
 Max. Velocity= 26.97 fps, Min. Travel Time= 0.0 min  
 Avg. Velocity = 11.47 fps, Avg. Travel Time= 0.0 min

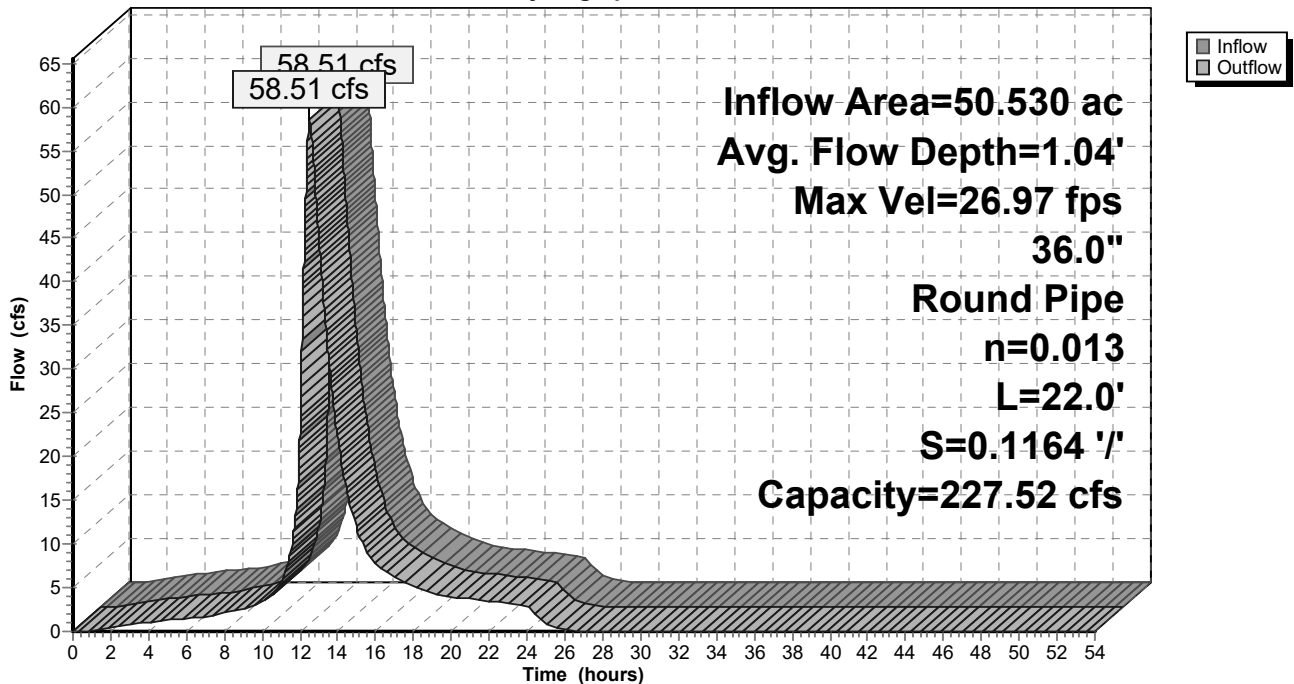
Peak Storage= 48 cf @ 12.52 hrs  
 Average Depth at Peak Storage= 1.04' , Surface Width= 2.85'  
 Bank-Full Depth= 3.00' Flow Area= 7.1 sf, Capacity= 227.52 cfs

36.0" Round Pipe  
 n= 0.013 Concrete pipe, bends & connections  
 Length= 22.0' Slope= 0.1164 '/'  
 Inlet Invert= 80.76', Outlet Invert= 78.20'



### Reach RCP: 36" RCP

Hydrograph



### Summary for Link POA-A1: POA-A1 (ROCKY BROOK)

[62] Hint: Exceeded Reach RCP OUTLET depth by 1.80' @ 0.00 hrs

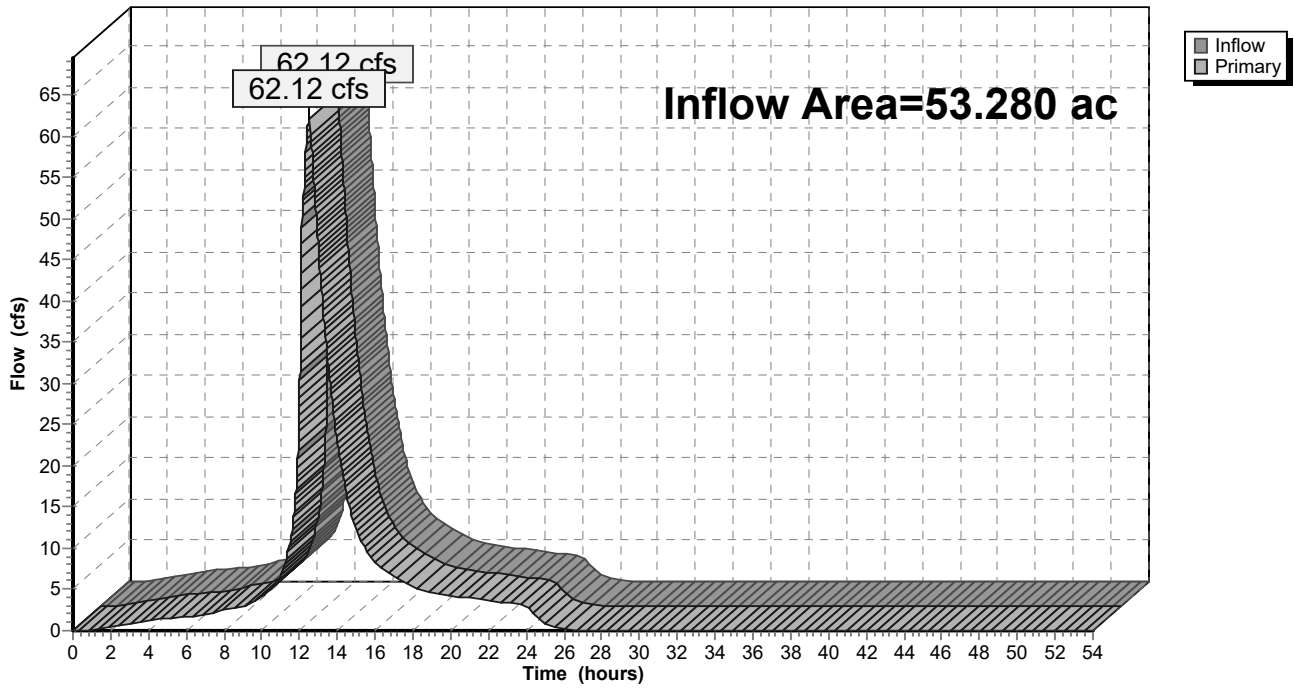
Inflow Area = 53.280 ac, 33.34% Impervious, Inflow Depth = 3.47" for 4-MER 25YR event  
Inflow = 62.12 cfs @ 12.51 hrs, Volume= 15.422 af  
Primary = 62.12 cfs @ 12.51 hrs, Volume= 15.422 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

Fixed water surface Elevation= 80.00'

### Link POA-A1: POA-A1 (ROCKY BROOK)

Hydrograph



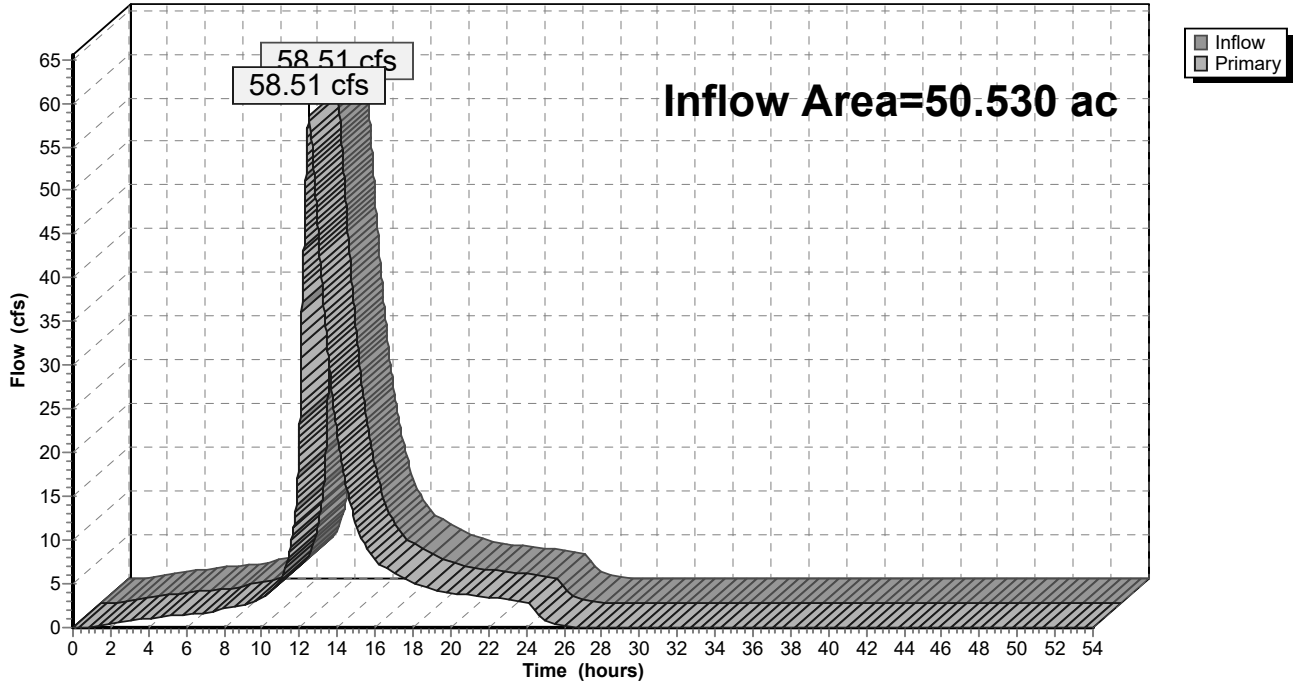
### Summary for Link POA-A1 A: POA-A1 A (36" CULVERT)

Inflow Area = 50.530 ac, 31.33% Impervious, Inflow Depth = 3.37" for 4-MER 25YR event  
Inflow = 58.51 cfs @ 12.52 hrs, Volume= 14.181 af  
Primary = 58.51 cfs @ 12.52 hrs, Volume= 14.181 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-A1 A: POA-A1 A (36" CULVERT)

Hydrograph

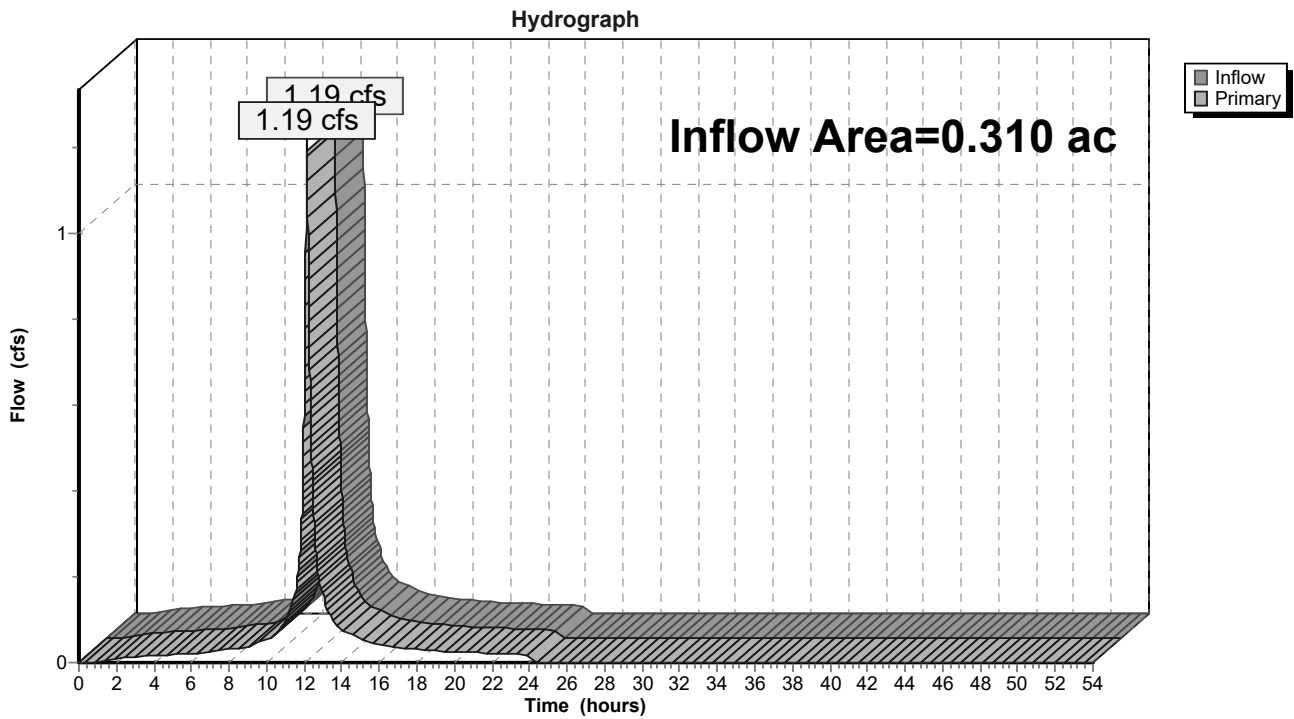


### Summary for Link POA-A2: POA-A2 (BANK ST)

Inflow Area = 0.310 ac, 65.81% Impervious, Inflow Depth = 4.45" for 4-MER 25YR event  
Inflow = 1.19 cfs @ 12.14 hrs, Volume= 0.115 af  
Primary = 1.19 cfs @ 12.14 hrs, Volume= 0.115 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-A2: POA-A2 (BANK ST)



Time span=0.00-54.00 hrs, dt=0.01 hrs, 5401 points  
 Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. U1 as Pervious  
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

<b>Subcatchment EA-1: EA-1</b>	Runoff Area=0.480 ac 68.75% Impervious Runoff Depth=6.88" Tc=6.0 min CN=65/98 Runoff=2.92 cfs 0.275 af
<b>Subcatchment EA-10-OS: EA-10-OS</b>	Runoff Area=0.480 ac 31.25% Impervious Runoff Depth=6.55" Tc=6.0 min CN=79/98 Runoff=2.93 cfs 0.262 af
<b>Subcatchment EA-2: EA-2</b>	Runoff Area=1.290 ac 95.43% Impervious Runoff Depth=7.95" Tc=6.0 min CN=69/98 Runoff=8.82 cfs 0.855 af
<b>Subcatchment EA-3: EA-3</b>	Runoff Area=2.130 ac 83.57% Impervious Runoff Depth=7.70" Tc=6.0 min CN=77/98 Runoff=14.29 cfs 1.366 af
<b>Subcatchment EA-4: EA-4</b>	Runoff Area=0.200 ac 70.00% Impervious Runoff Depth=6.35" Tc=6.0 min CN=48/98 Runoff=1.09 cfs 0.106 af
<b>Subcatchment EA-5: EA-5</b>	Runoff Area=0.140 ac 0.00% Impervious Runoff Depth=8.11" Tc=6.0 min CN=98/0 Runoff=0.97 cfs 0.095 af
<b>Subcatchment EA-6-ROW: EA-6-ROW</b>	Runoff Area=0.120 ac 78.33% Impervious Runoff Depth=7.01" Tc=6.0 min CN=55/98 Runoff=0.73 cfs 0.070 af
<b>Subcatchment EA-7-ROW: EA-7-ROW</b>	Runoff Area=0.110 ac 58.18% Impervious Runoff Depth=6.27" Tc=6.0 min CN=61/98 Runoff=0.61 cfs 0.057 af
<b>Subcatchment EA-8-OS: EA-8-OS</b>	Runoff Area=46.420 ac 30.00% Impervious Runoff Depth=5.03" Flow Length=2,965' Tc=36.1 min CN=61/98 Runoff=84.73 cfs 19.468 af
<b>Subcatchment EA-9-OS: EA-9-OS</b>	Runoff Area=2.220 ac 11.26% Impervious Runoff Depth=5.04" Flow Length=500' Tc=6.7 min CN=69/98 Runoff=10.41 cfs 0.932 af
<b>Reach RCP: 36" RCP</b>	Avg. Flow Depth=1.32' Max Vel=30.44 fps Inflow=91.50 cfs 21.600 af 36.0" Round Pipe n=0.013 L=22.0' S=0.1164 '/ Capacity=227.52 cfs Outflow=91.50 cfs 21.600 af
<b>Link POA-A1: POA-A1 (ROCKY BROOK)</b>	Inflow=96.46 cfs 23.323 af Primary=96.46 cfs 23.323 af
<b>Link POA-A1 A: POA-A1 A (36" CULVERT)</b>	Inflow=91.50 cfs 21.600 af Primary=91.50 cfs 21.600 af
<b>Link POA-A2: POA-A2 (BANK ST)</b>	Inflow=1.71 cfs 0.163 af Primary=1.71 cfs 0.163 af

**Total Runoff Area = 53.590 ac Runoff Volume = 23.486 af Average Runoff Depth = 5.26"**  
**66.48% Pervious = 35.625 ac 33.52% Impervious = 17.965 ac**



**Summary for Subcatchment EA-1: EA-1**

Runoff = 2.92 cfs @ 12.14 hrs, Volume= 0.275 af, Depth= 6.88"

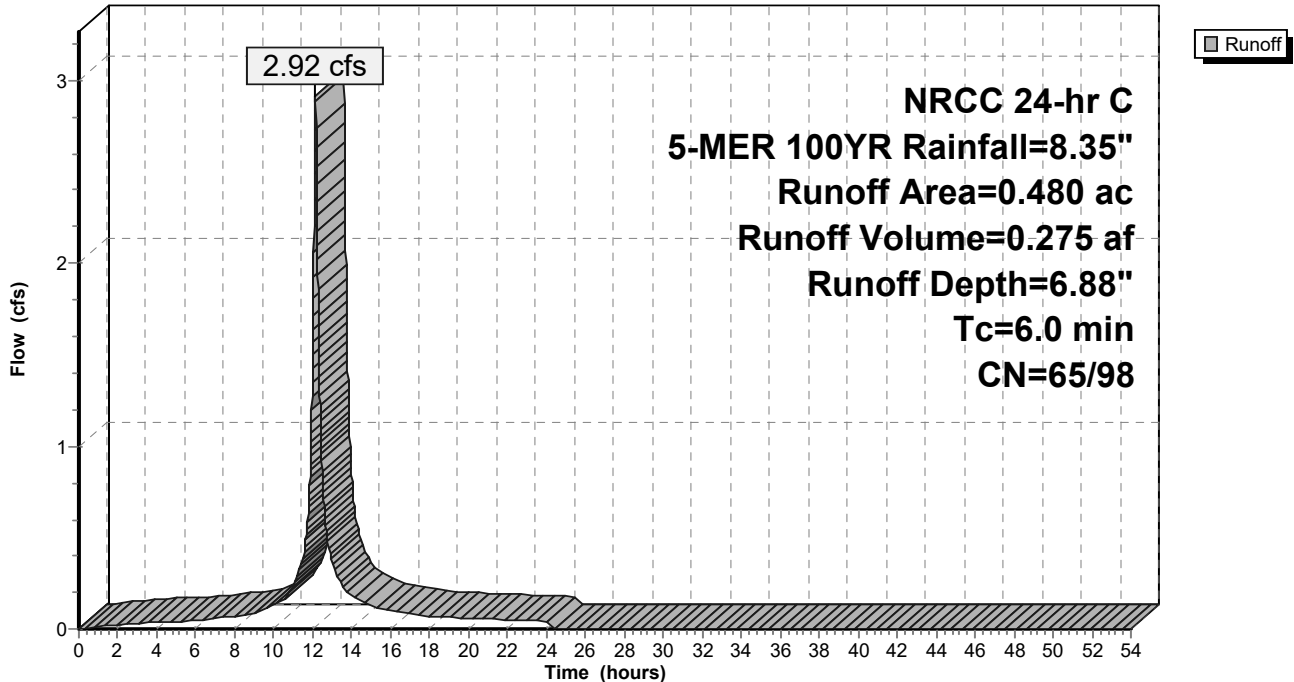
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 5-MER 100YR Rainfall=8.35"

Area (ac)	CN	Description
* 0.330	98	Roofs
* 0.030	98	Unconnected pavement
0.010	91	Gravel roads, HSG D
0.040	39	>75% Grass cover, Good, HSG A
0.070	61	>75% Grass cover, Good, HSG B
0.480	88	Weighted Average
0.150	65	31.25% Pervious Area
0.330	98	68.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EA-1: EA-1**

Hydrograph



**Summary for Subcatchment EA-10-OS: EA-10-OS**

Runoff = 2.93 cfs @ 12.14 hrs, Volume= 0.262 af, Depth= 6.55"

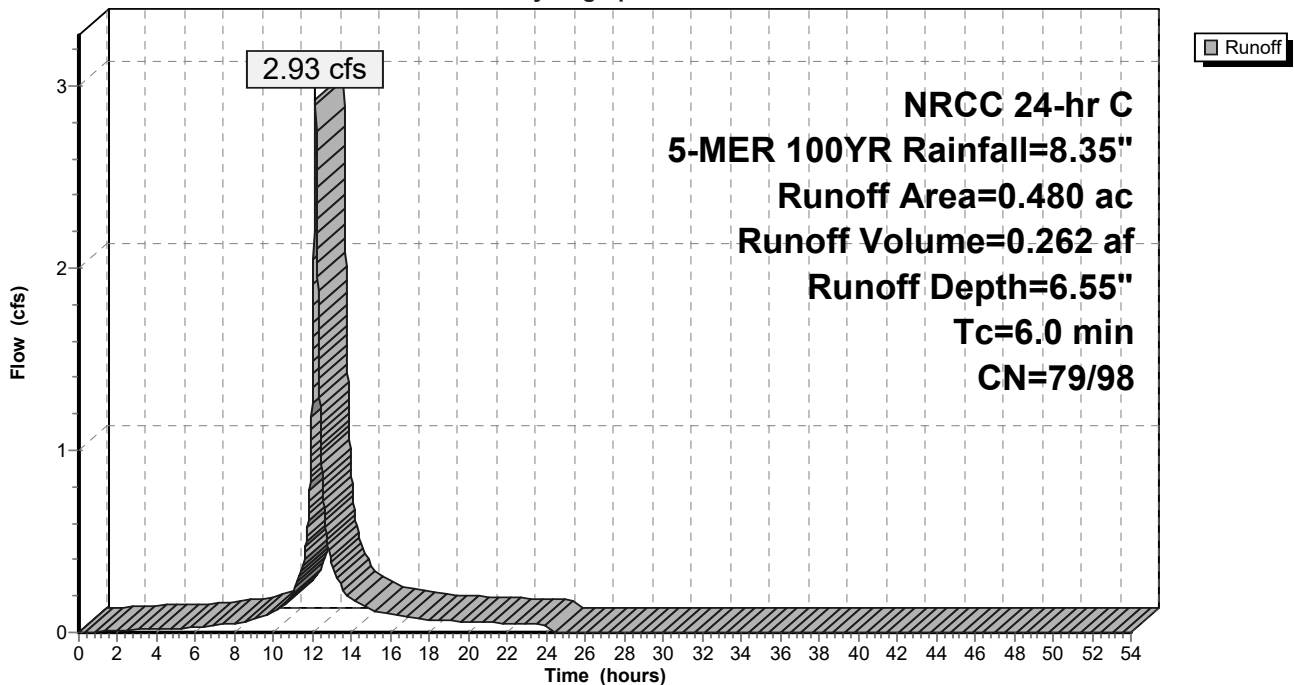
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 5-MER 100YR Rainfall=8.35"

Area (ac)	CN	Description
0.150	98	Roofs, HSG C
0.070	98	Unconnected pavement, HSG C
0.220	74	>75% Grass cover, Good, HSG C
0.040	72	Woods/grass comb., Good, HSG C
0.480	85	Weighted Average
0.330	79	68.75% Pervious Area
0.150	98	31.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EA-10-OS: EA-10-OS**

Hydrograph



**Summary for Subcatchment EA-2: EA-2**

Runoff = 8.82 cfs @ 12.14 hrs, Volume= 0.855 af, Depth= 7.95"

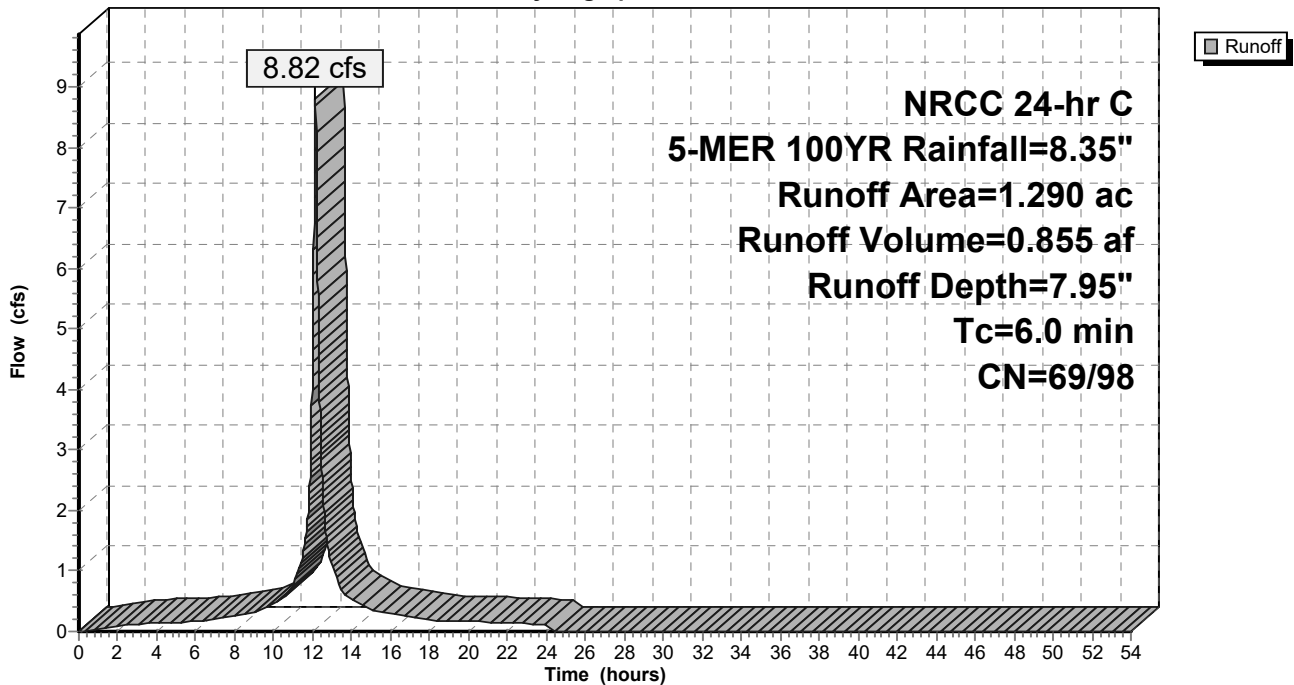
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 5-MER 100YR Rainfall=8.35"

Area (ac)	CN	Description
* 0.581	98	Roofs
* 0.010	98	Unconnected pavement
* 0.650	98	Paved parking
0.015	76	Gravel roads, HSG A
0.022	73	Brush, Good, HSG D
0.012	30	Brush, Good, HSG A
1.290	97	Weighted Average
0.059	69	4.57% Pervious Area
1.231	98	95.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EA-2: EA-2**

Hydrograph



**Summary for Subcatchment EA-3: EA-3**

Runoff = 14.29 cfs @ 12.14 hrs, Volume= 1.366 af, Depth= 7.70"

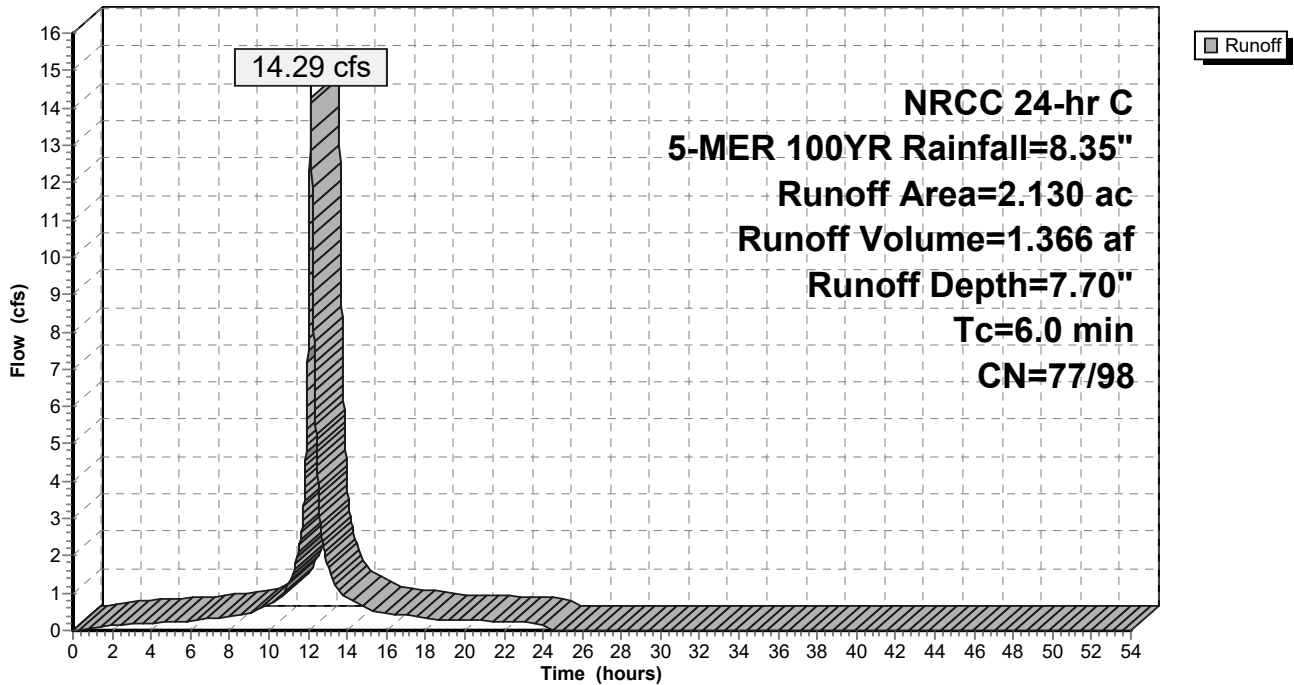
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 5-MER 100YR Rainfall=8.35"

Area (ac)	CN	Description
* 0.420	98	Roofs
* 0.050	98	Unconnected pavement
* 1.360	98	Paved parking
0.300	73	Brush, Good, HSG D
2.130	94	Weighted Average
0.350	77	16.43% Pervious Area
1.780	98	83.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EA-3: EA-3**

Hydrograph



**Summary for Subcatchment EA-4: EA-4**

Runoff = 1.09 cfs @ 12.14 hrs, Volume= 0.106 af, Depth= 6.35"

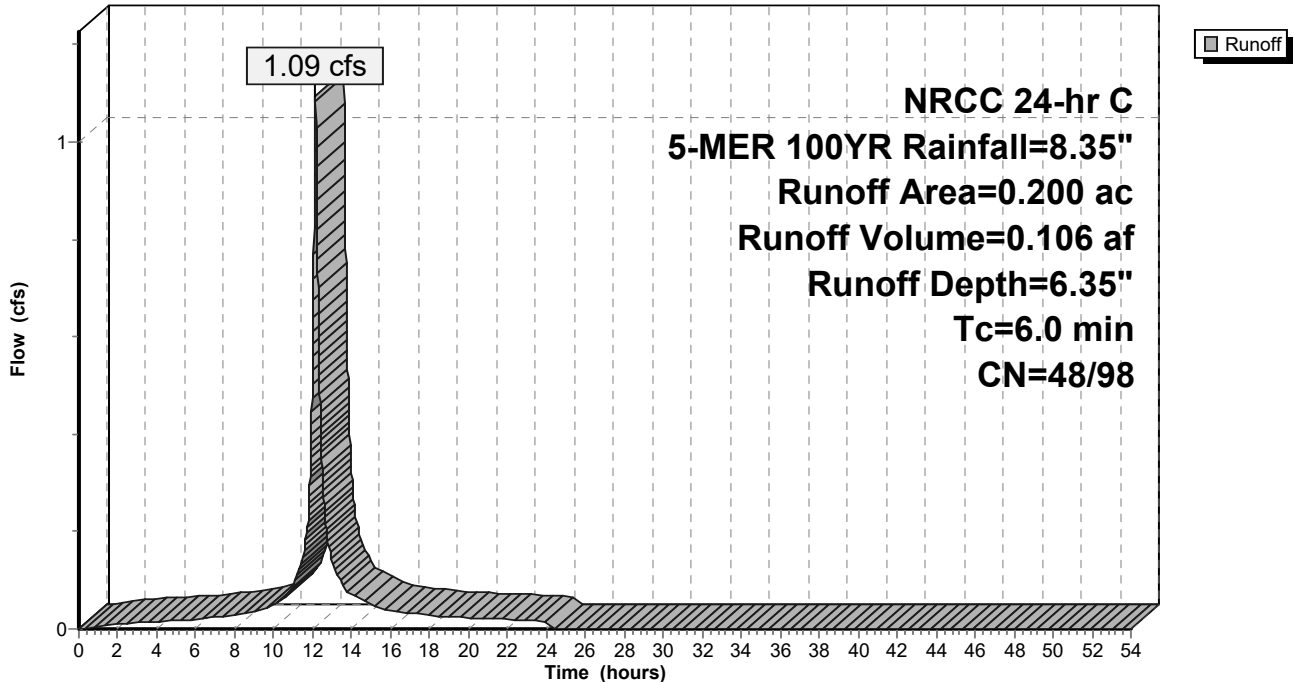
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 5-MER 100YR Rainfall=8.35"

Area (ac)	CN	Description
0.140	98	Roofs, HSG C
0.020	61	>75% Grass cover, Good, HSG B
0.009	39	>75% Grass cover, Good, HSG A
0.010	30	Brush, Good, HSG A
0.021	48	Brush, Good, HSG B
0.200	83	Weighted Average
0.060	48	30.00% Pervious Area
0.140	98	70.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EA-4: EA-4**

Hydrograph



**Summary for Subcatchment EA-5: EA-5**

Runoff = 0.97 cfs @ 12.14 hrs, Volume= 0.095 af, Depth= 8.11"

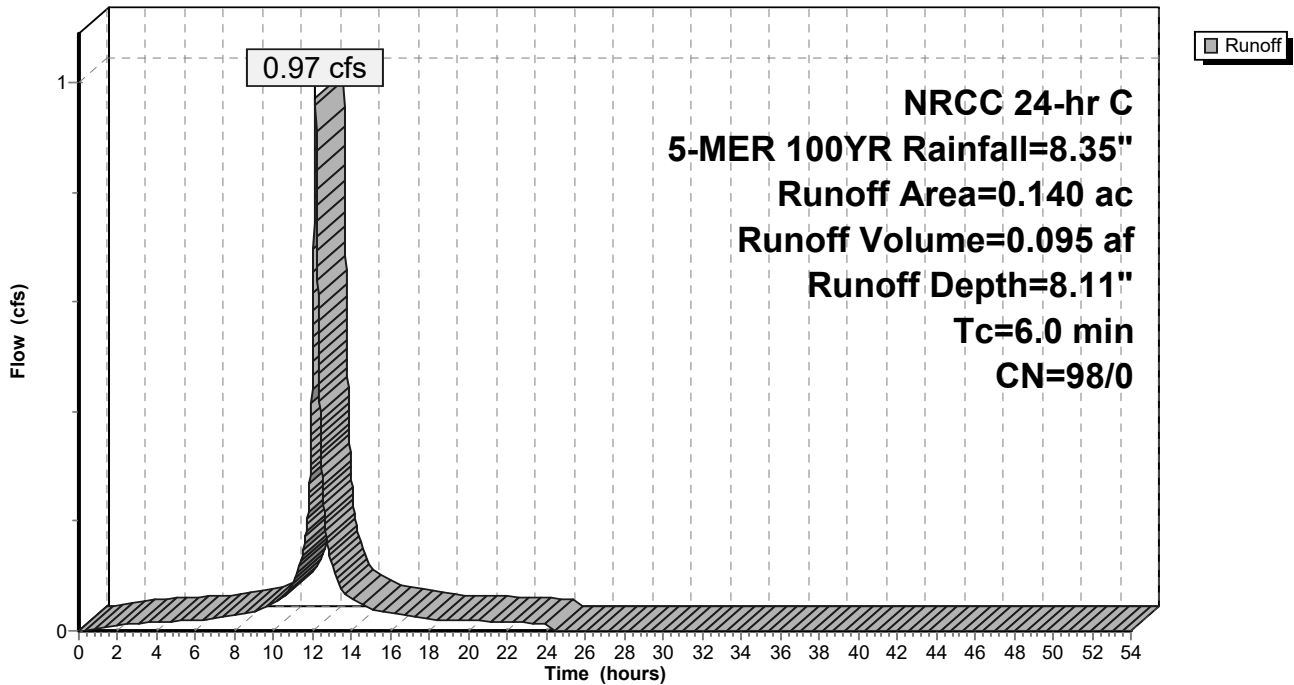
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 5-MER 100YR Rainfall=8.35"

Area (ac)	CN	Description
0.140	98	Unconnected roofs, HSG D
0.140	98	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EA-5: EA-5**

Hydrograph



**Summary for Subcatchment EA-6-ROW: EA-6-ROW**

Runoff = 0.73 cfs @ 12.14 hrs, Volume= 0.070 af, Depth= 7.01"

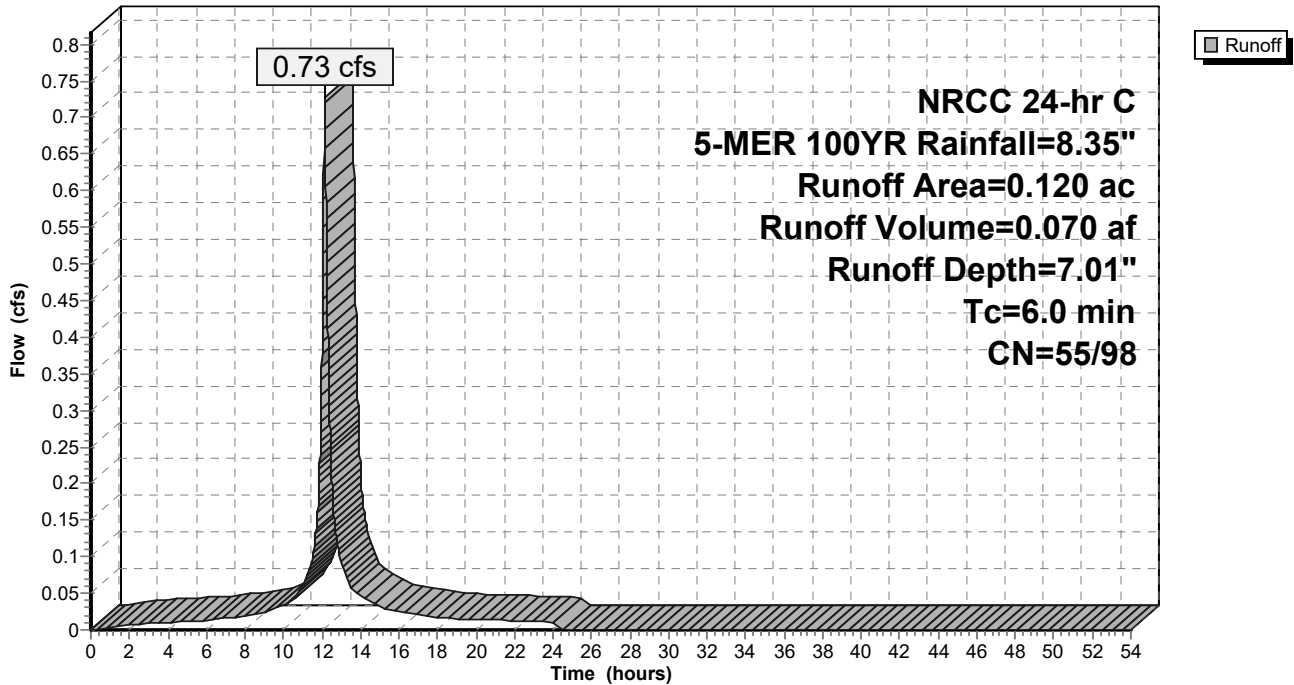
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 5-MER 100YR Rainfall=8.35"

Area (ac)	CN	Description
0.007	39	>75% Grass cover, Good, HSG A
0.019	61	>75% Grass cover, Good, HSG B
0.094	98	Paved roads w/curbs & sewers, HSG D
0.120	89	Weighted Average
0.026	55	21.67% Pervious Area
0.094	98	78.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EA-6-ROW: EA-6-ROW**

Hydrograph



**Summary for Subcatchment EA-7-ROW: EA-7-ROW**

Runoff = 0.61 cfs @ 12.14 hrs, Volume= 0.057 af, Depth= 6.27"

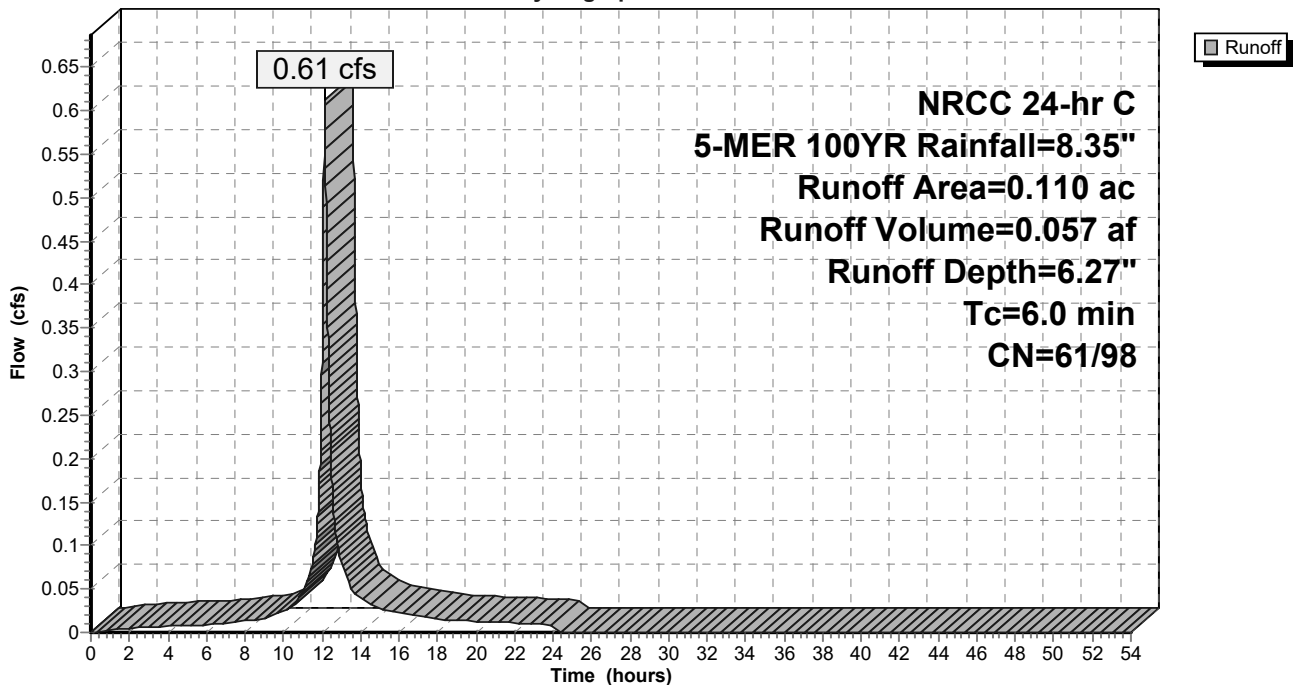
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 5-MER 100YR Rainfall=8.35"

Area (ac)	CN	Description
0.016	39	>75% Grass cover, Good, HSG A
0.012	61	>75% Grass cover, Good, HSG B
0.018	80	>75% Grass cover, Good, HSG D
0.064	98	Paved roads w/curbs & sewers, HSG D
0.110	82	Weighted Average
0.046	61	41.82% Pervious Area
0.064	98	58.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EA-7-ROW: EA-7-ROW**

Hydrograph





**Summary for Subcatchment EA-8-OS: EA-8-OS**

[47] Hint: Peak is 146% of capacity of segment #4

Runoff = 84.73 cfs @ 12.52 hrs, Volume= 19.468 af, Depth= 5.03"

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 5-MER 100YR Rainfall=8.35"

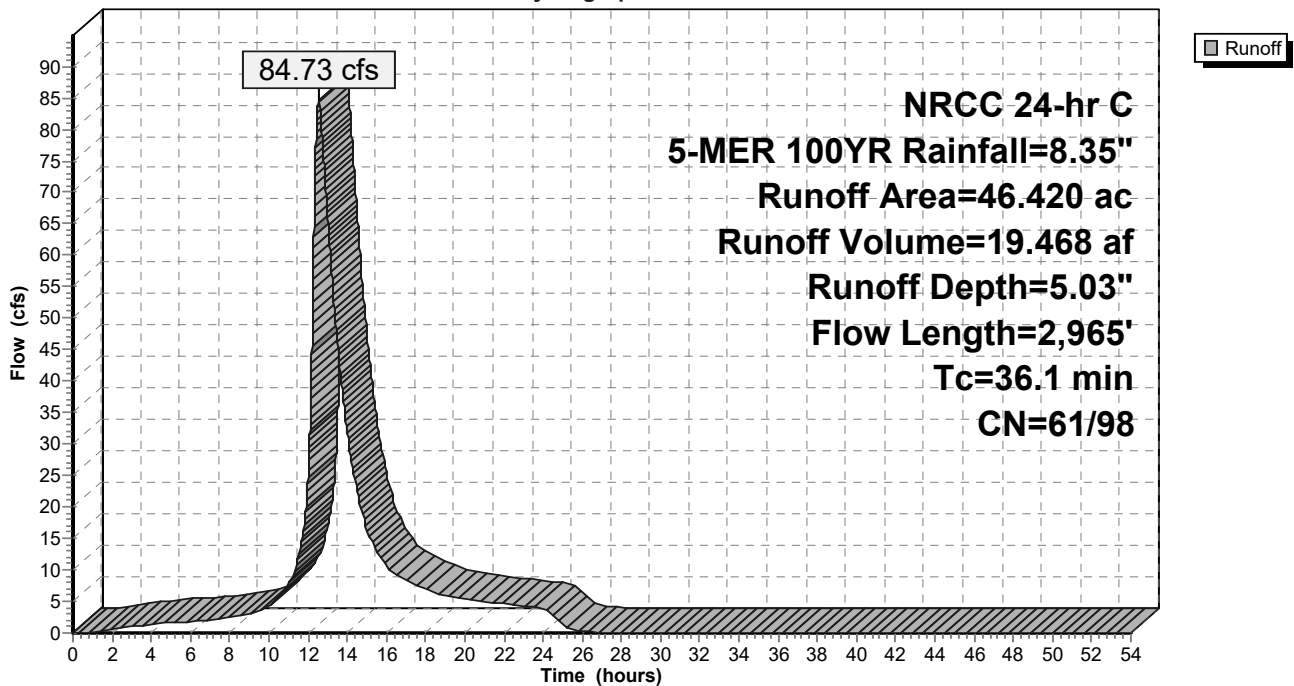
Area (ac)	CN	Description
46.420	72	1/3 acre lots, 30% imp, HSG B
32.494	61	70.00% Pervious Area
13.926	98	30.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.7	100	0.0100	0.13		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.31"
3.9	370	0.0060	1.57		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
17.5	2,100		2.00		<b>Direct Entry, Pipe Flow</b>
2.0	395	0.0170	3.22	57.93	<b>Trap/Vee/Rect Channel Flow,</b> Bot.W=4.50' D=2.00' Z= 2.0 & 2.5 ' Top.W=13.50' n= 0.070
36.1	2,965	Total			

**Subcatchment EA-8-OS: EA-8-OS**

Hydrograph



**Summary for Subcatchment EA-9-OS: EA-9-OS**

Runoff = 10.41 cfs @ 12.15 hrs, Volume= 0.932 af, Depth= 5.04"

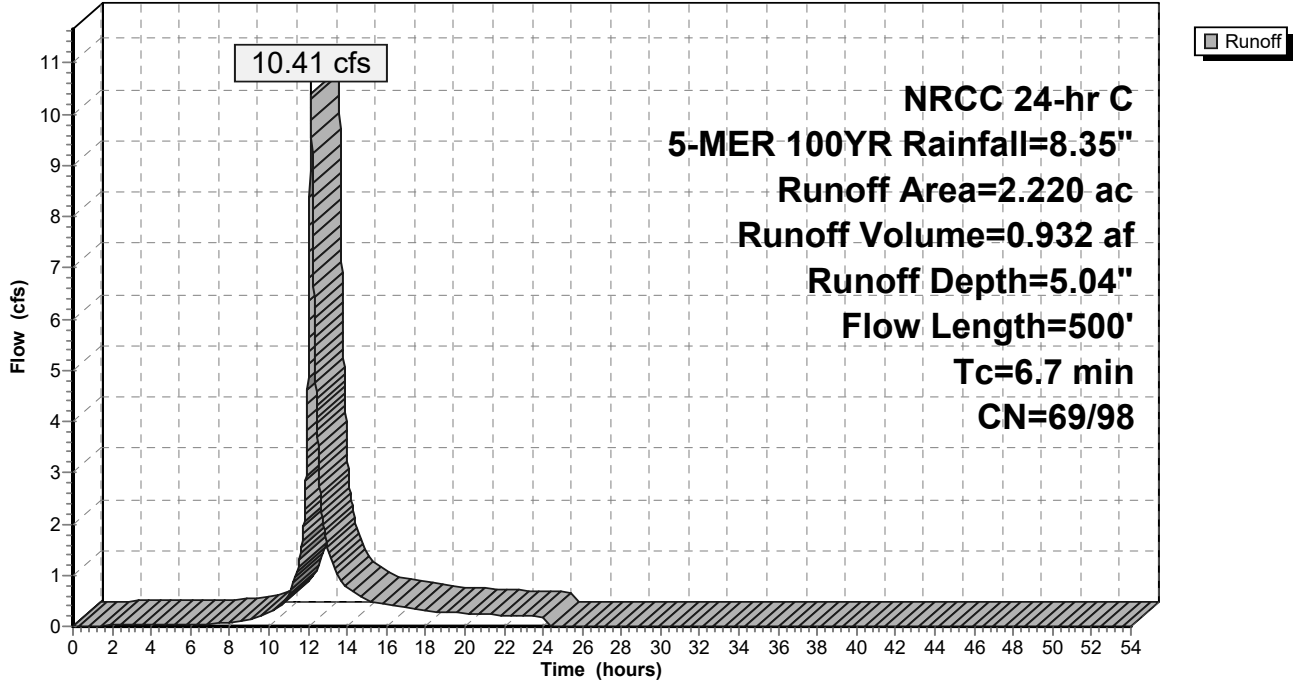
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 5-MER 100YR Rainfall=8.35"

Area (ac)	CN	Description
0.250	98	Roofs, HSG C
0.140	98	Unconnected pavement, HSG C
0.430	80	>75% Grass cover, Good, HSG D
0.870	61	>75% Grass cover, Good, HSG B
0.270	58	Woods/grass comb., Good, HSG B
0.050	79	Woods/grass comb., Good, HSG D
0.210	73	Brush, Good, HSG D
2.220	72	Weighted Average
1.970	69	88.74% Pervious Area
0.250	98	11.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	70	0.0900	0.29		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.31"
1.5	190	0.0900	2.10		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
1.2	240	0.0170	3.22	57.93	<b>Trap/Vee/Rect Channel Flow,</b> Bot.W=4.50' D=2.00' Z= 2.0 & 2.5 '/' Top.W=13.50' n= 0.070
6.7	500	Total			

Subcatchment EA-9-OS: EA-9-OS

Hydrograph



### Summary for Reach RCP: 36" RCP

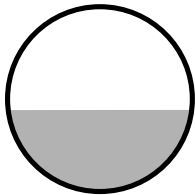
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 50.530 ac, 31.33% Impervious, Inflow Depth = 5.13" for 5-MER 100YR event  
 Inflow = 91.50 cfs @ 12.51 hrs, Volume= 21.600 af  
 Outflow = 91.50 cfs @ 12.51 hrs, Volume= 21.600 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs  
 Max. Velocity= 30.44 fps, Min. Travel Time= 0.0 min  
 Avg. Velocity = 12.86 fps, Avg. Travel Time= 0.0 min

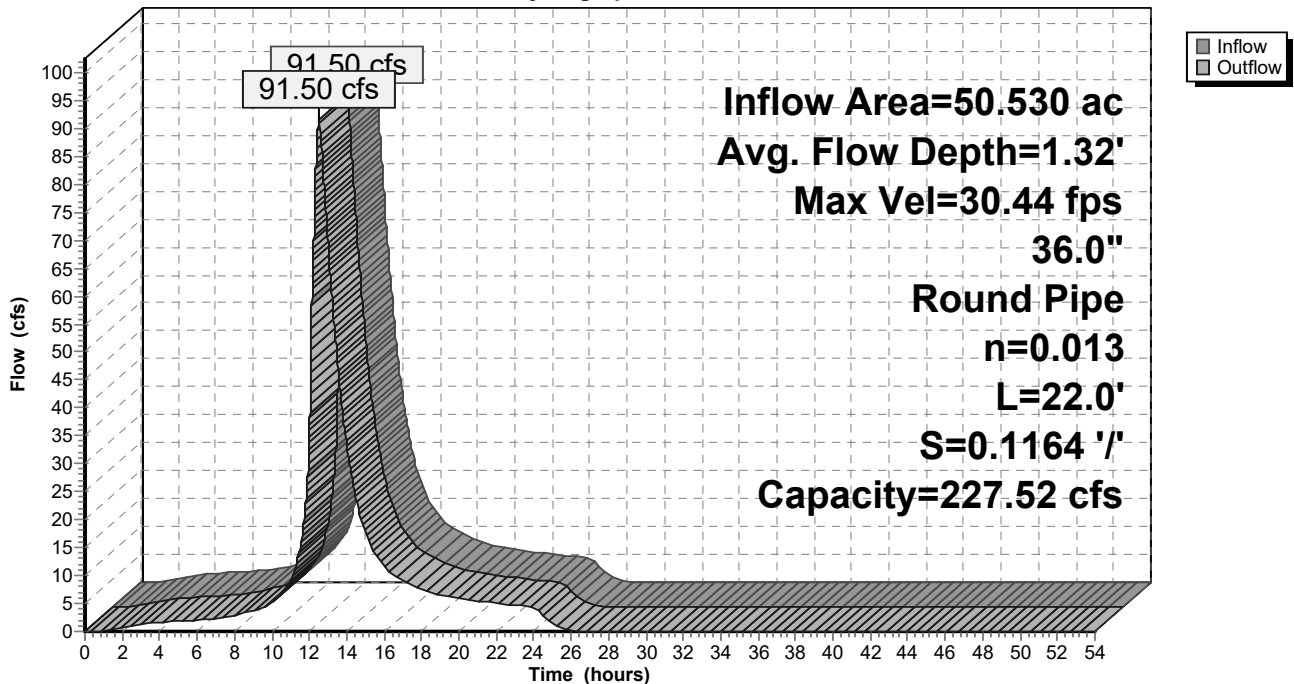
Peak Storage= 66 cf @ 12.51 hrs  
 Average Depth at Peak Storage= 1.32' , Surface Width= 2.98'  
 Bank-Full Depth= 3.00' Flow Area= 7.1 sf, Capacity= 227.52 cfs

36.0" Round Pipe  
 n= 0.013 Concrete pipe, bends & connections  
 Length= 22.0' Slope= 0.1164 '/'  
 Inlet Invert= 80.76', Outlet Invert= 78.20'



### Reach RCP: 36" RCP

Hydrograph



### Summary for Link POA-A1: POA-A1 (ROCKY BROOK)

[62] Hint: Exceeded Reach RCP OUTLET depth by 1.80' @ 0.00 hrs

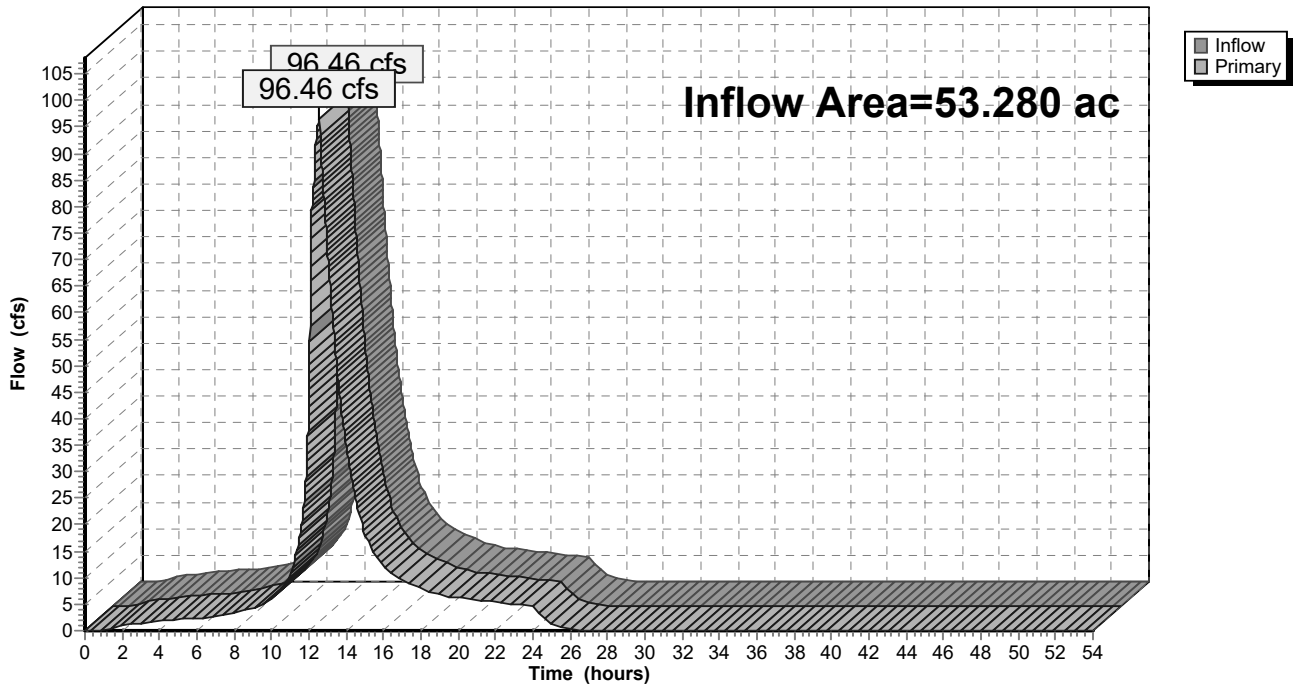
Inflow Area = 53.280 ac, 33.34% Impervious, Inflow Depth = 5.25" for 5-MER 100YR event  
Inflow = 96.46 cfs @ 12.51 hrs, Volume= 23.323 af  
Primary = 96.46 cfs @ 12.51 hrs, Volume= 23.323 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

Fixed water surface Elevation= 80.00'

### Link POA-A1: POA-A1 (ROCKY BROOK)

Hydrograph

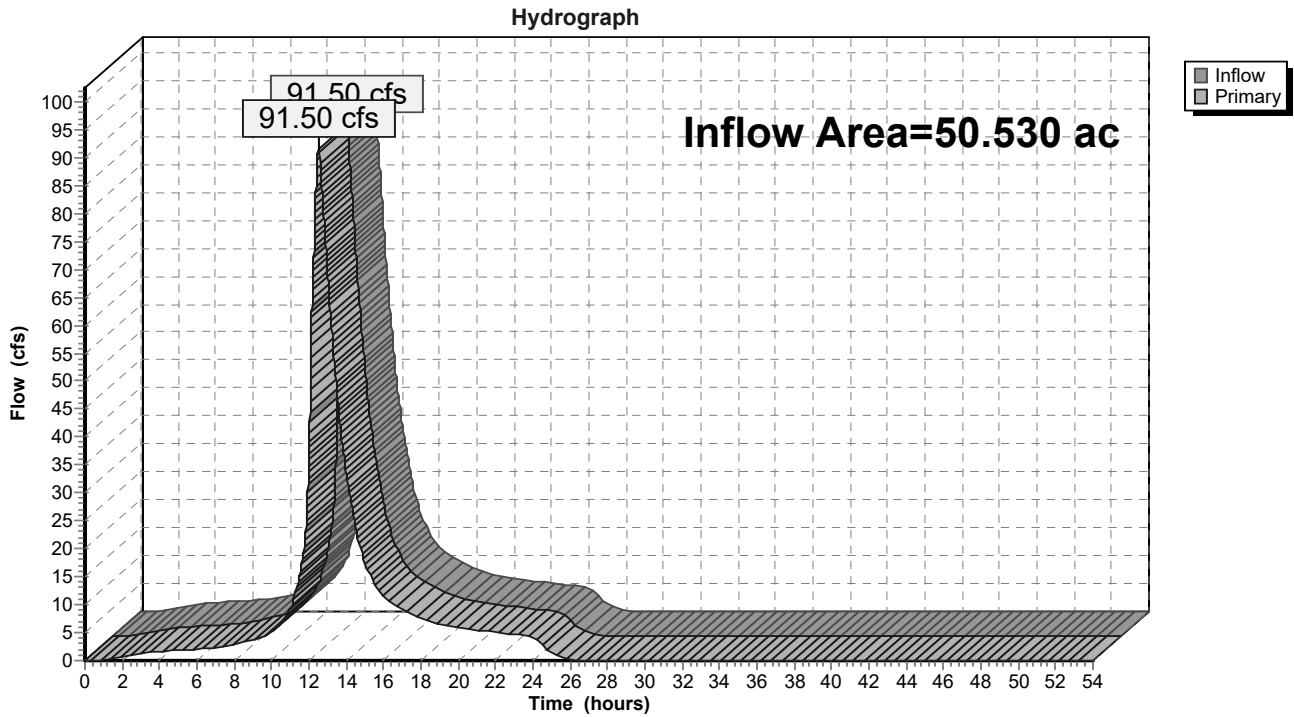


### Summary for Link POA-A1 A: POA-A1 A (36" CULVERT)

Inflow Area = 50.530 ac, 31.33% Impervious, Inflow Depth = 5.13" for 5-MER 100YR event  
Inflow = 91.50 cfs @ 12.51 hrs, Volume= 21.600 af  
Primary = 91.50 cfs @ 12.51 hrs, Volume= 21.600 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-A1 A: POA-A1 A (36" CULVERT)

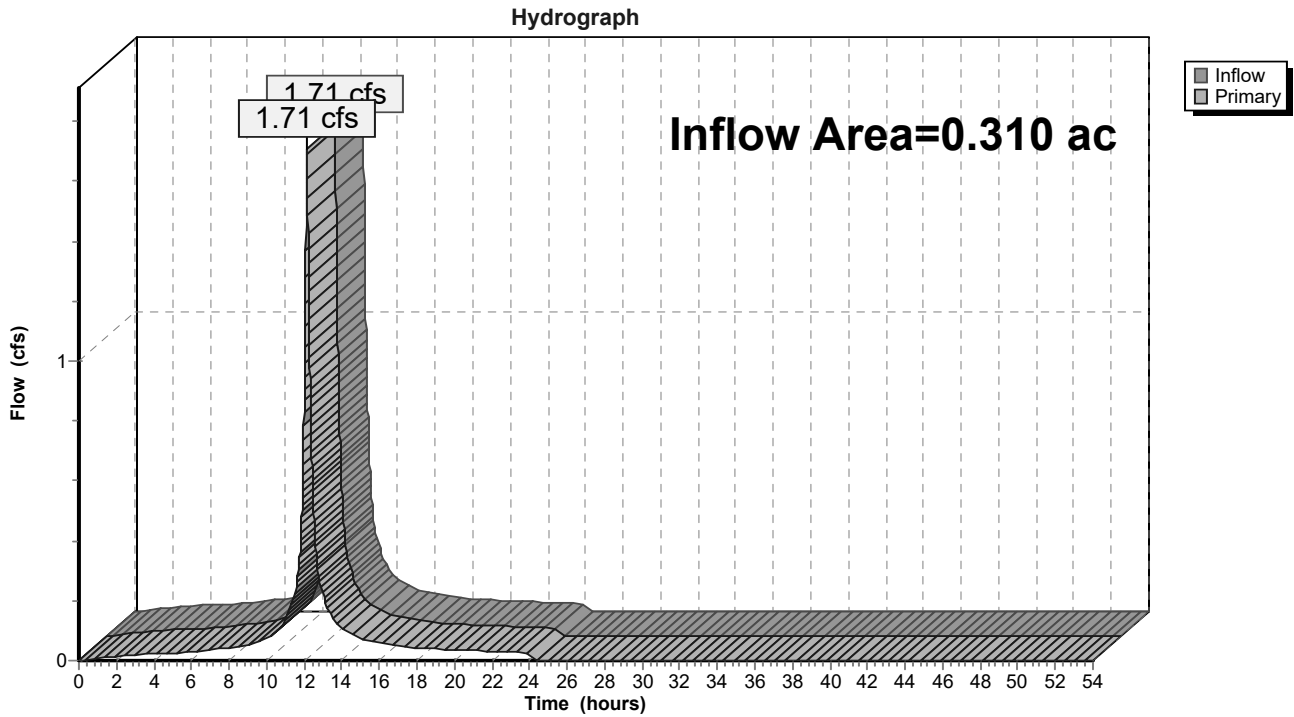


### Summary for Link POA-A2: POA-A2 (BANK ST)

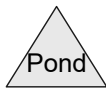
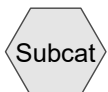
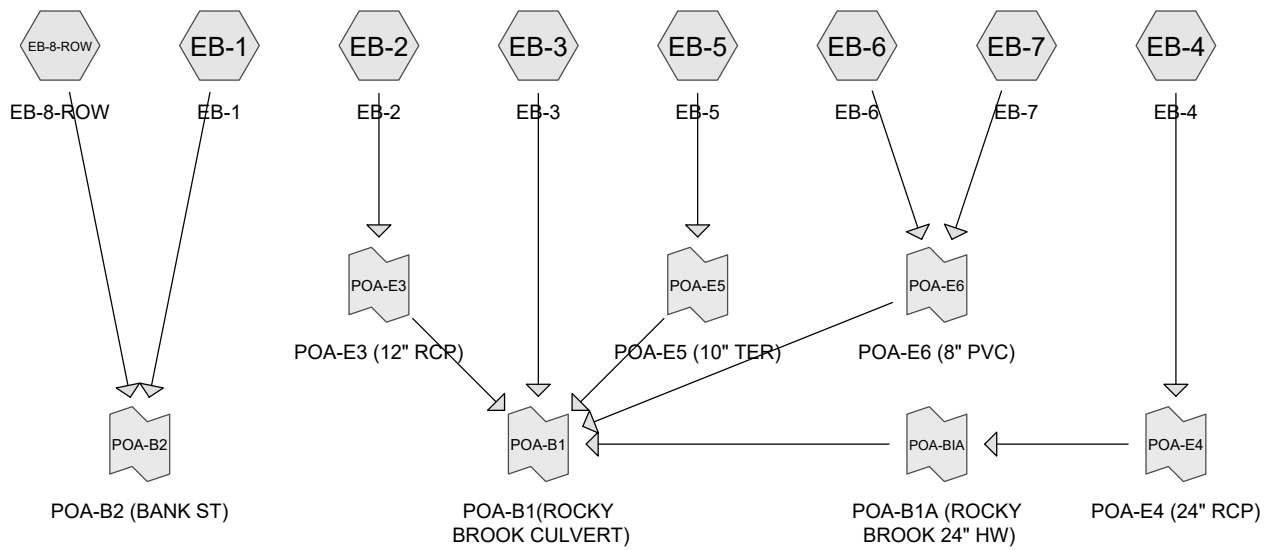
Inflow Area = 0.310 ac, 65.81% Impervious, Inflow Depth = 6.32" for 5-MER 100YR event  
Inflow = 1.71 cfs @ 12.14 hrs, Volume= 0.163 af  
Primary = 1.71 cfs @ 12.14 hrs, Volume= 0.163 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-A2: POA-A2 (BANK ST)



**TRACT B EXISTING**



**Routing Diagram for 200811\_Model**  
 Prepared by Maser Consulting, Printed 8/12/2020  
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## **200811\_Model**

Prepared by Maser Consulting

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### **Project Notes**

Rainfall events imported from "200330\_Analysis.hcp"

## 200811\_Model

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### Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-MER 1YR	NRCC 24-hr	C	Default	24.00	1	2.74	2
2	2-MER 2YR	NRCC 24-hr	C	Default	24.00	1	3.31	2
3	3-MER 10YR	NRCC 24-hr	C	Default	24.00	1	5.02	2
4	4-MER 25YR	NRCC 24-hr	C	Default	24.00	1	6.20	2
5	5-MER 100YR	NRCC 24-hr	C	Default	24.00	1	8.35	2
6	NJDEP WQ	NJ DEP 2-hr		Default	2.00	1	1.25	2

**Area Listing (selected nodes)**

Area (acres)	CN	Description (subcatchment-numbers)
0.789	80	>75% Grass cover, Good, HSG D (EB-1, EB-3, EB-4, EB-7)
0.020	73	Brush, Good, HSG D (EB-2)
0.600	91	Gravel roads, HSG D (EB-3)
1.232	98	Paved parking (EB-4, EB-5, EB-6)
0.341	98	Paved parking, HSG D (EB-3, EB-7, EB-8-ROW)
0.481	98	Roofs (EB-4, EB-6)
0.470	98	Roofs, HSG C (EB-1, EB-3)
0.100	98	Roofs, HSG D (EB-2, EB-7)
0.087	98	Unconnected pavement (EB-4, EB-5, EB-6)
0.020	98	Unconnected pavement, HSG D (EB-1)
0.140	86	Wetlands (EB-3)
<b>4.280</b>	<b>93</b>	<b>TOTAL AREA</b>

## 200811\_Model

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### Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.470	HSG C	EB-1, EB-3
1.870	HSG D	EB-1, EB-2, EB-3, EB-4, EB-7, EB-8-ROW
1.940	Other	EB-3, EB-4, EB-5, EB-6
<b>4.280</b>		<b>TOTAL AREA</b>

**200811\_Model**

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**Ground Covers (selected nodes)**

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	0.789	0.000	0.789	>75% Grass cover, Good	EB-1, EB-3, EB-4, EB-7
0.000	0.000	0.000	0.020	0.000	0.020	Brush, Good	EB-2
0.000	0.000	0.000	0.600	0.000	0.600	Gravel roads	EB-3
0.000	0.000	0.000	0.341	1.232	1.573	Paved parking	EB-3, EB-4, EB-5, EB-6, EB-7, EB-8-RO W
0.000	0.000	0.470	0.100	0.481	1.051	Roofs	EB-1, EB-2, EB-3, EB-4, EB-6, EB-7
0.000	0.000	0.000	0.020	0.087	0.107	Unconnected pavement	EB-1, EB-4, EB-5, EB-6
0.000	0.000	0.000	0.000	0.140	0.140	Wetlands	EB-3
<b>0.000</b>	<b>0.000</b>	<b>0.470</b>	<b>1.870</b>	<b>1.940</b>	<b>4.280</b>	<b>TOTAL AREA</b>	

Time span=0.00-54.00 hrs, dt=0.01 hrs, 5401 points  
 Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious  
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

<b>Subcatchment EB-1: EB-1</b>	Runoff Area=0.250 ac 60.00% Impervious Runoff Depth=2.03" Tc=6.0 min CN=84/98 Runoff=0.47 cfs 0.042 af
<b>Subcatchment EB-2: EB-2</b>	Runoff Area=0.080 ac 75.00% Impervious Runoff Depth=2.06" Tc=6.0 min CN=73/98 Runoff=0.15 cfs 0.014 af
<b>Subcatchment EB-3: EB-3</b>	Runoff Area=1.570 ac 30.57% Impervious Runoff Depth=1.82" Tc=6.0 min CN=87/98 Runoff=2.72 cfs 0.238 af
<b>Subcatchment EB-4: EB-4</b>	Runoff Area=1.520 ac 77.63% Impervious Runoff Depth=2.23" Tc=6.0 min CN=83/98 Runoff=3.06 cfs 0.282 af
<b>Subcatchment EB-5: EB-5</b>	Runoff Area=0.190 ac 94.74% Impervious Runoff Depth=2.51" Tc=6.0 min CN=98/98 Runoff=0.43 cfs 0.040 af
<b>Subcatchment EB-6: EB-6</b>	Runoff Area=0.380 ac 92.89% Impervious Runoff Depth=2.51" Tc=6.0 min CN=98/98 Runoff=0.85 cfs 0.079 af
<b>Subcatchment EB-7: EB-7</b>	Runoff Area=0.140 ac 50.71% Impervious Runoff Depth=1.79" Tc=6.0 min CN=80/98 Runoff=0.23 cfs 0.021 af
<b>Subcatchment EB-8-ROW: EB-8-ROW</b>	Runoff Area=0.150 ac 100.00% Impervious Runoff Depth=2.51" Tc=6.0 min CN=0/98 Runoff=0.34 cfs 0.031 af
<b>Link POA-B1: POA-B1(ROCKY BROOK CULVERT)</b>	Inflow=7.44 cfs 0.674 af Primary=7.44 cfs 0.674 af
<b>Link POA-B2: POA-B2 (BANK ST)</b>	Inflow=0.80 cfs 0.074 af Primary=0.80 cfs 0.074 af
<b>Link POA-BIA: POA-B1A (ROCKY BROOK 24" HW)</b>	Inflow=3.06 cfs 0.282 af Primary=3.06 cfs 0.282 af
<b>Link POA-E3: POA-E3 (12" RCP)</b>	Inflow=0.15 cfs 0.014 af Primary=0.15 cfs 0.014 af
<b>Link POA-E4: POA-E4 (24" RCP)</b>	Inflow=3.06 cfs 0.282 af Primary=3.06 cfs 0.282 af
<b>Link POA-E5: POA-E5 (10" TER)</b>	Inflow=0.43 cfs 0.040 af Primary=0.43 cfs 0.040 af
<b>Link POA-E6: POA-E6 (8" PVC)</b>	Inflow=1.08 cfs 0.100 af Primary=1.08 cfs 0.100 af

**Total Runoff Area = 4.280 ac Runoff Volume = 0.747 af Average Runoff Depth = 2.10"**  
**38.69% Pervious = 1.656 ac 61.31% Impervious = 2.624 ac**

**Summary for Subcatchment EB-1: EB-1**

Runoff = 0.47 cfs @ 12.14 hrs, Volume= 0.042 af, Depth= 2.03"

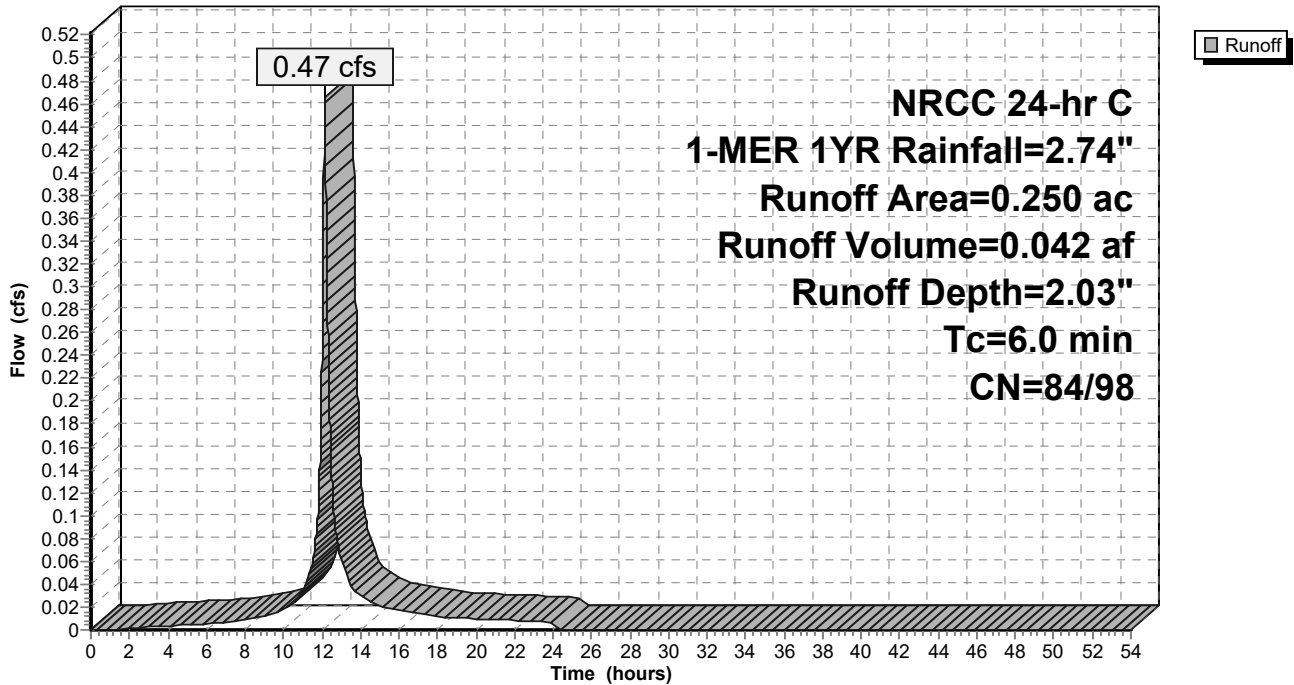
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 1-MER 1YR Rainfall=2.74"

Area (ac)	CN	Description
0.150	98	Roofs, HSG C
0.020	98	Unconnected pavement, HSG D
0.080	80	>75% Grass cover, Good, HSG D
0.250	92	Weighted Average
0.100	84	40.00% Pervious Area
0.150	98	60.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EB-1: EB-1**

Hydrograph



**Summary for Subcatchment EB-2: EB-2**

Runoff = 0.15 cfs @ 12.14 hrs, Volume= 0.014 af, Depth= 2.06"

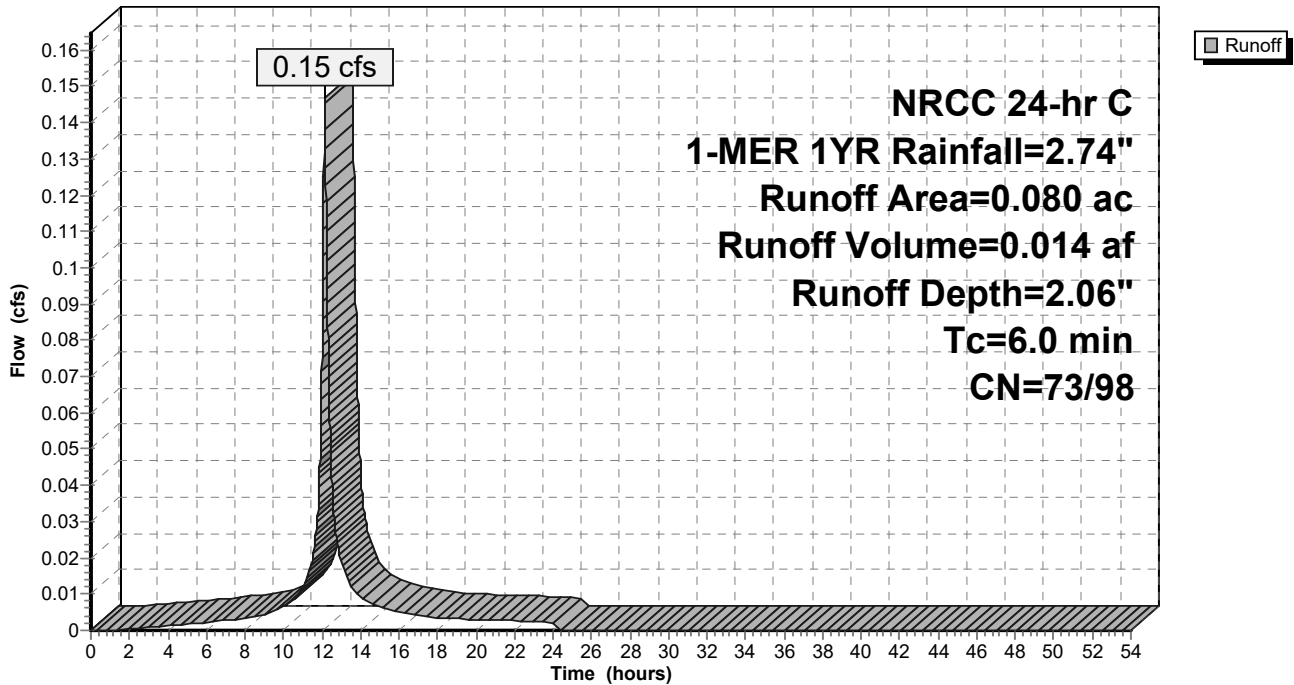
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 1-MER 1YR Rainfall=2.74"

Area (ac)	CN	Description
0.060	98	Roofs, HSG D
0.020	73	Brush, Good, HSG D
0.080	92	Weighted Average
0.020	73	25.00% Pervious Area
0.060	98	75.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EB-2: EB-2**

Hydrograph





**Summary for Subcatchment EB-3: EB-3**

Runoff = 2.72 cfs @ 12.14 hrs, Volume= 0.238 af, Depth= 1.82"

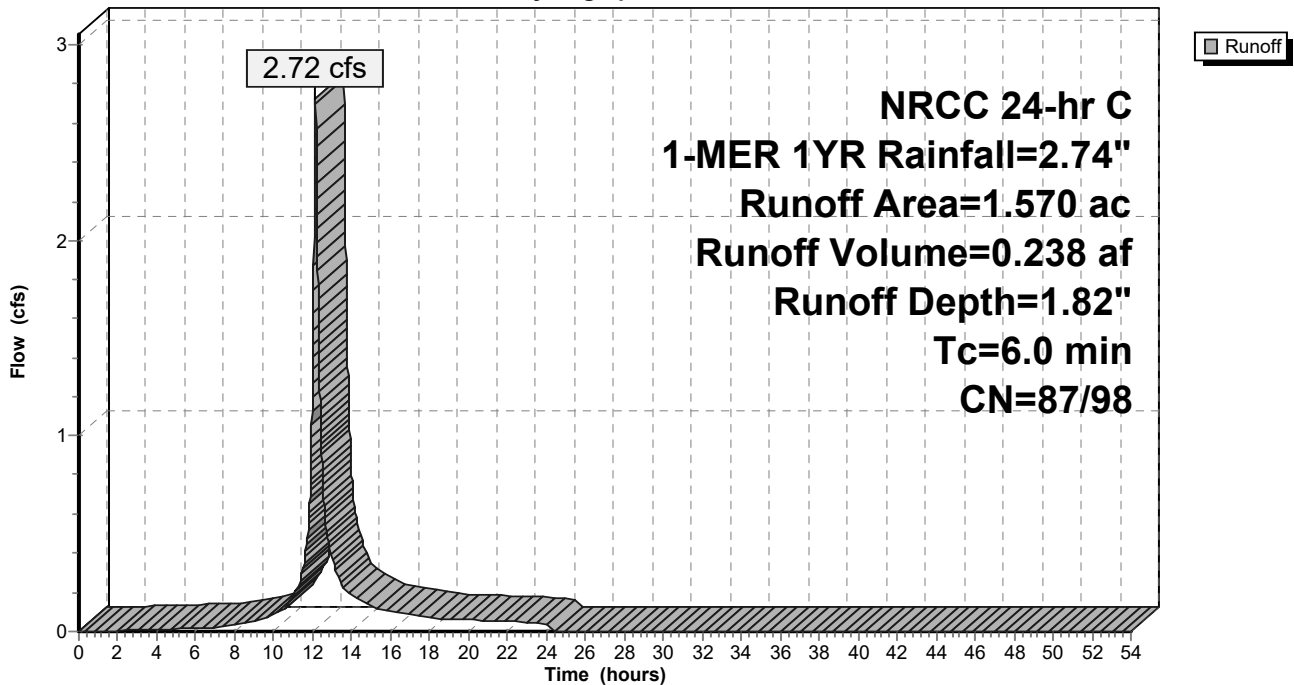
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 1-MER 1YR Rainfall=2.74"

Area (ac)	CN	Description
0.300	98	Roofs, HSG C
0.600	91	Gravel roads, HSG D
0.160	98	Paved parking, HSG D
0.350	80	>75% Grass cover, Good, HSG D
* 0.140	86	Wetlands
0.020	98	Roofs, HSG C
1.570	90	Weighted Average
1.090	87	69.43% Pervious Area
0.480	98	30.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EB-3: EB-3**

Hydrograph



**Summary for Subcatchment EB-4: EB-4**

Runoff = 3.06 cfs @ 12.14 hrs, Volume= 0.282 af, Depth= 2.23"

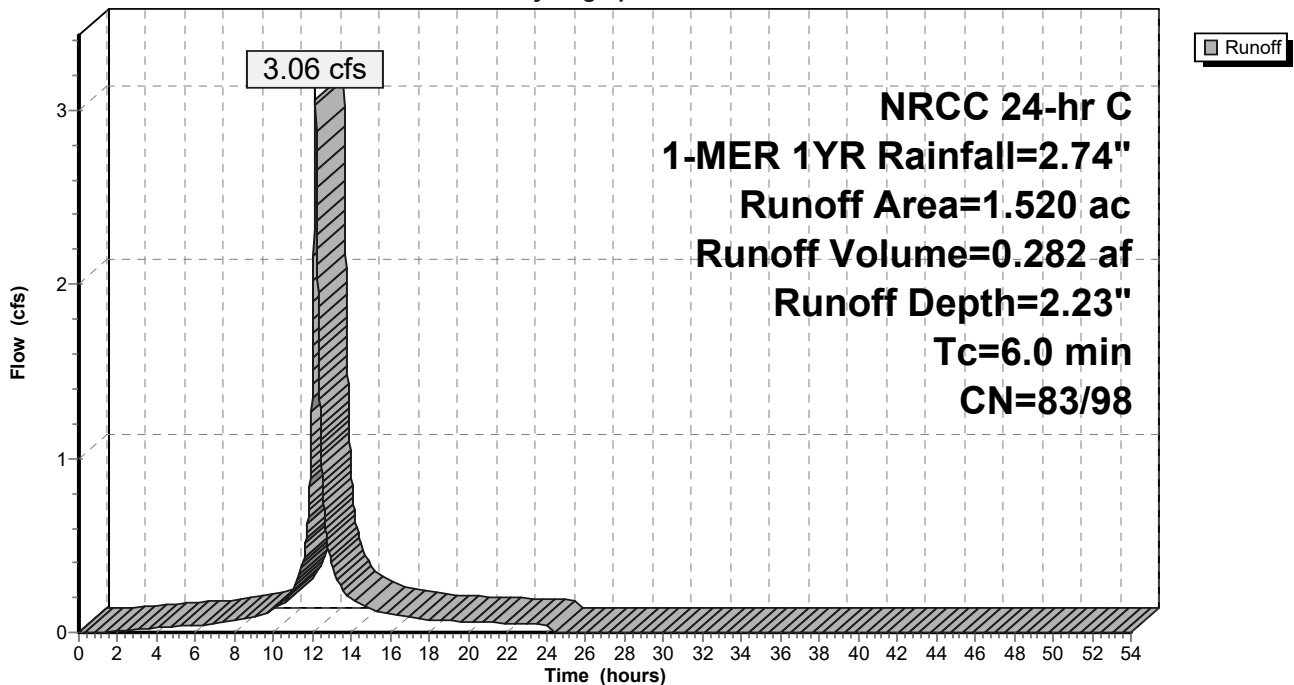
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 1-MER 1YR Rainfall=2.74"

Area (ac)	CN	Description
* 0.230	98	Roofs
* 0.050	98	Unconnected pavement
* 0.950	98	Paved parking
0.290	80	>75% Grass cover, Good, HSG D
1.520	95	Weighted Average
0.340	83	22.37% Pervious Area
1.180	98	77.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EB-4: EB-4**

Hydrograph



**Summary for Subcatchment EB-5: EB-5**

Runoff = 0.43 cfs @ 12.14 hrs, Volume= 0.040 af, Depth= 2.51"

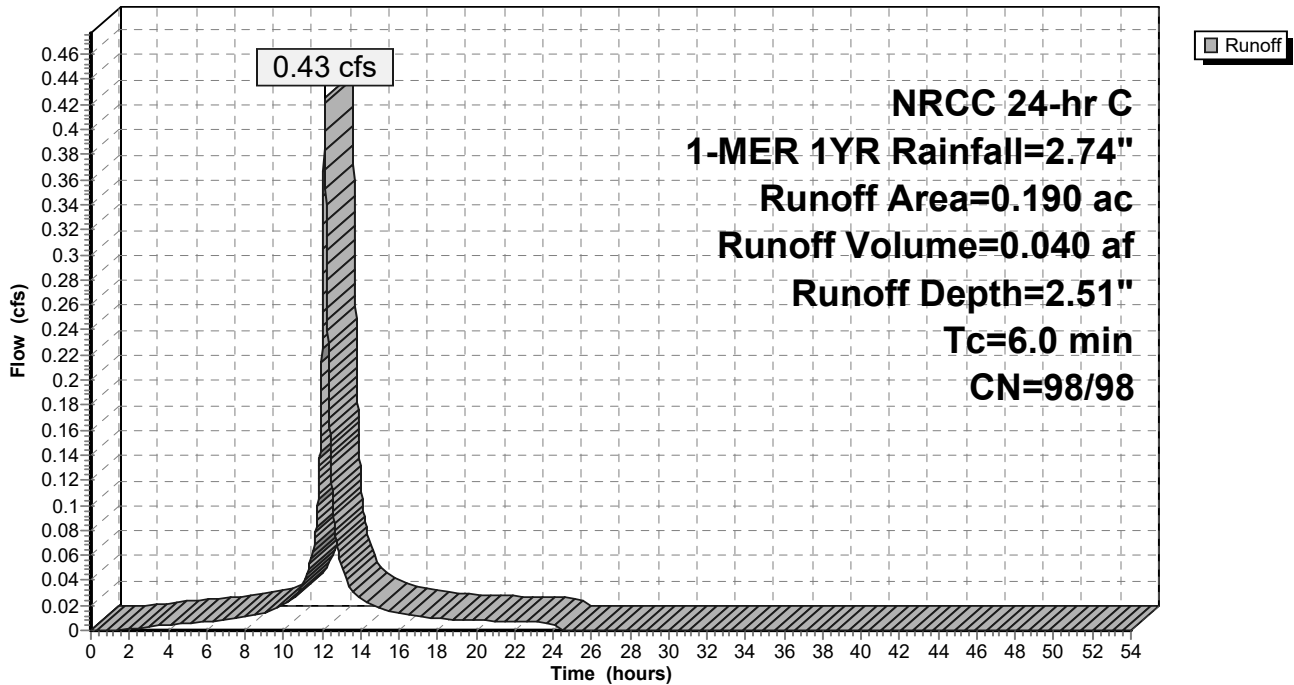
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 1-MER 1YR Rainfall=2.74"

Area (ac)	CN	Description
* 0.010	98	Unconnected pavement
* 0.180	98	Paved parking
0.190	98	Weighted Average
0.010	98	5.26% Pervious Area
0.180	98	94.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EB-5: EB-5**

Hydrograph



**Summary for Subcatchment EB-6: EB-6**

Runoff = 0.85 cfs @ 12.14 hrs, Volume= 0.079 af, Depth= 2.51"

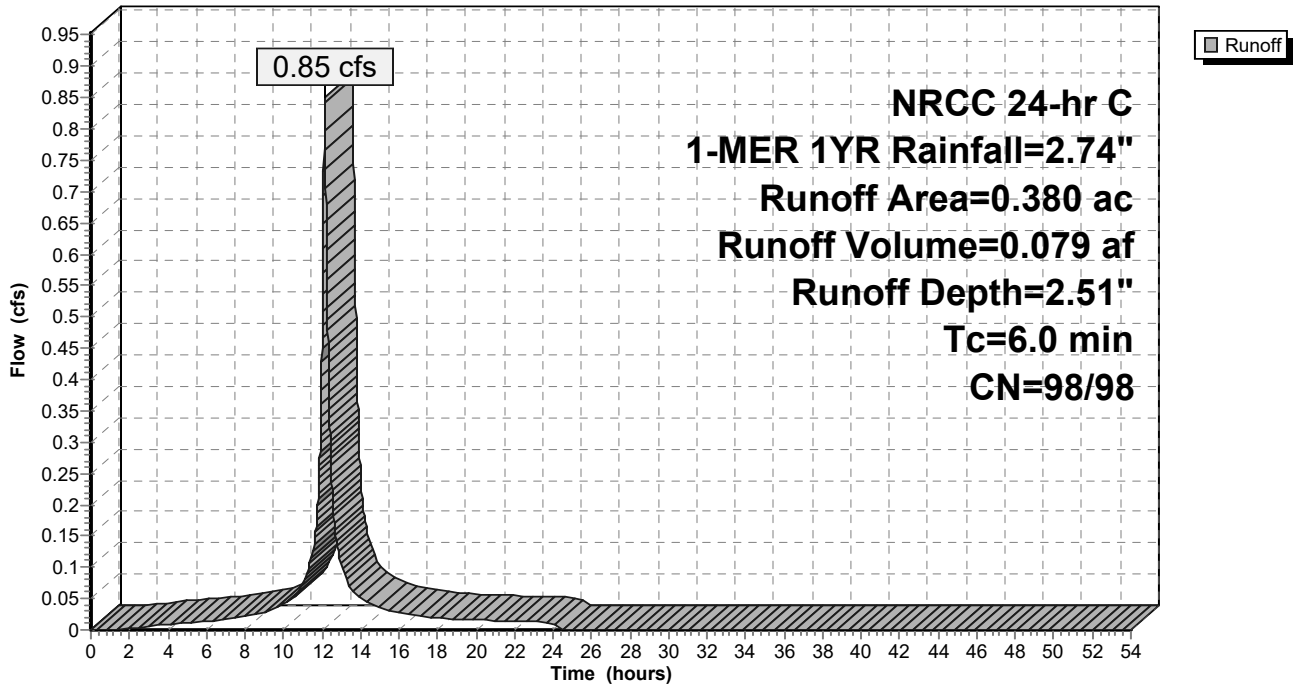
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 1-MER 1YR Rainfall=2.74"

Area (ac)	CN	Description
* 0.251	98	Roofs
* 0.027	98	Unconnected pavement
* 0.102	98	Paved parking
0.380	98	Weighted Average
0.027	98	7.11% Pervious Area
0.353	98	92.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EB-6: EB-6**

Hydrograph



**Summary for Subcatchment EB-7: EB-7**

Runoff = 0.23 cfs @ 12.14 hrs, Volume= 0.021 af, Depth= 1.79"

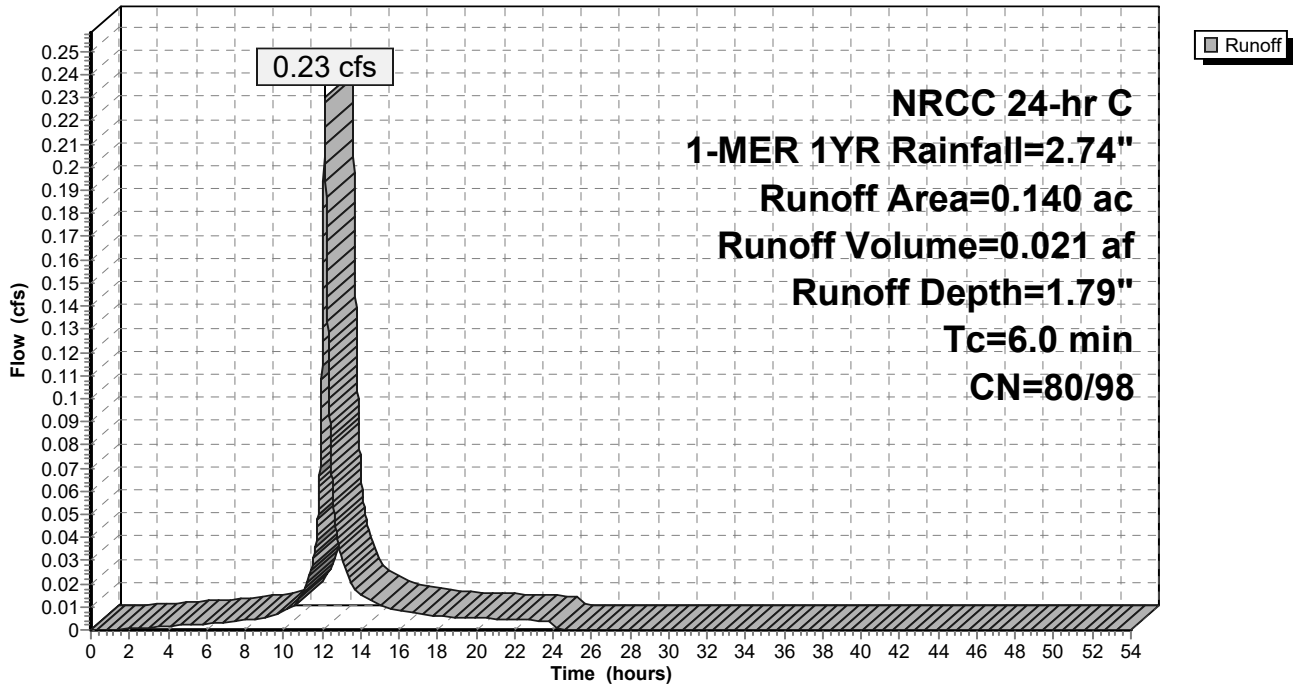
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 1-MER 1YR Rainfall=2.74"

Area (ac)	CN	Description
0.031	98	Paved parking, HSG D
0.040	98	Roofs, HSG D
0.069	80	>75% Grass cover, Good, HSG D
0.140	89	Weighted Average
0.069	80	49.29% Pervious Area
0.071	98	50.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EB-7: EB-7**

Hydrograph



**Summary for Subcatchment EB-8-ROW: EB-8-ROW**

Runoff = 0.34 cfs @ 12.14 hrs, Volume= 0.031 af, Depth= 2.51"

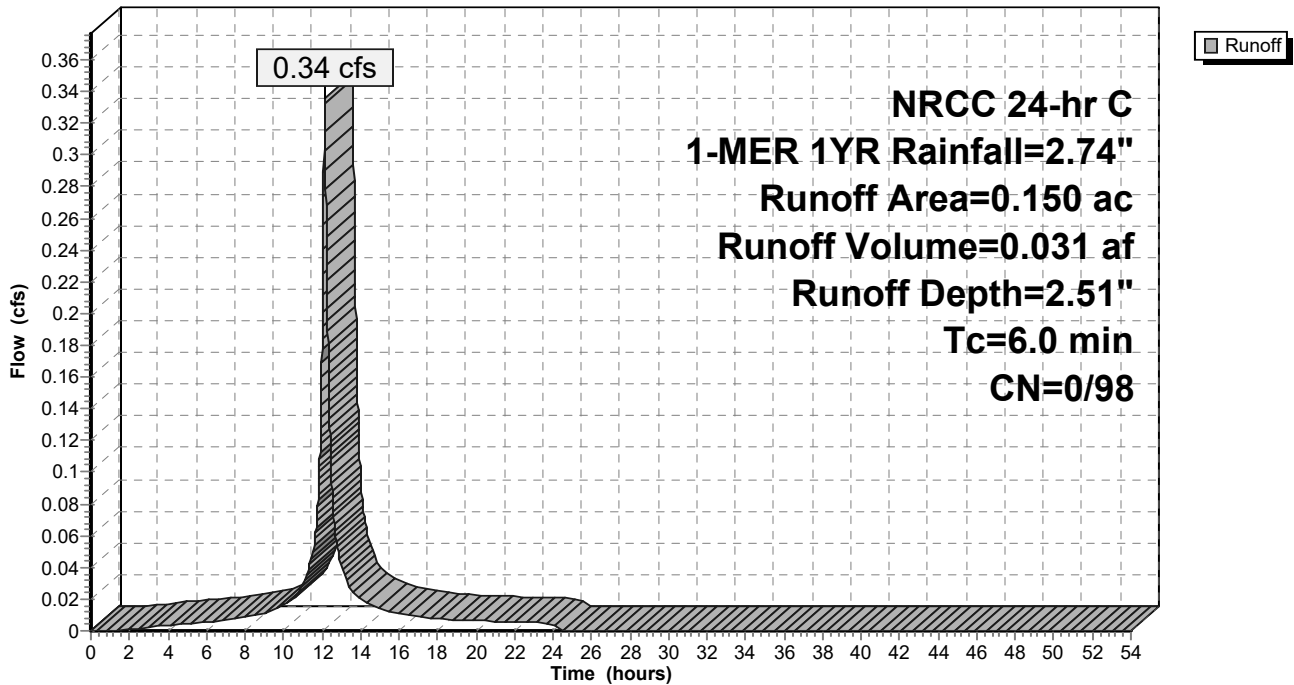
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 1-MER 1YR Rainfall=2.74"

Area (ac)	CN	Description
0.150	98	Paved parking, HSG D
0.150	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EB-8-ROW: EB-8-ROW**

Hydrograph

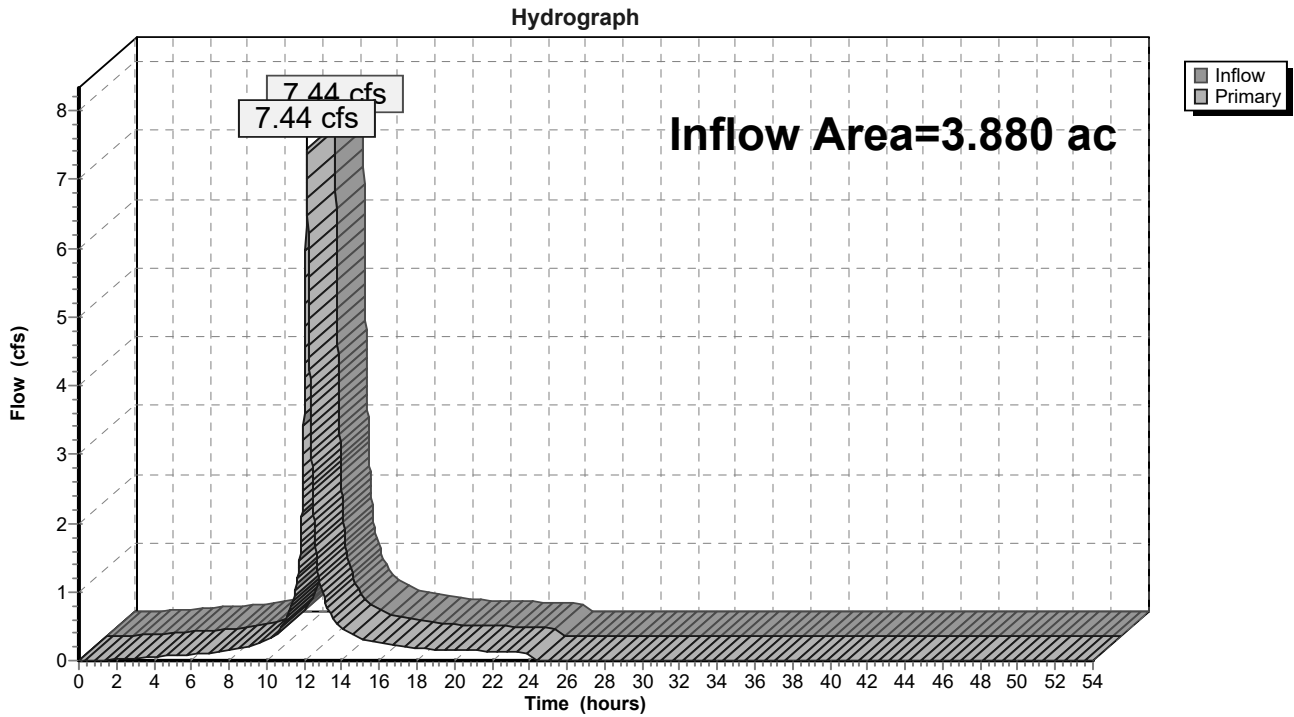


### Summary for Link POA-B1: POA-B1(ROCKY BROOK CULVERT)

Inflow Area = 3.880 ac, 59.90% Impervious, Inflow Depth = 2.08" for 1-MER 1YR event  
Inflow = 7.44 cfs @ 12.14 hrs, Volume= 0.674 af  
Primary = 7.44 cfs @ 12.14 hrs, Volume= 0.674 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-B1: POA-B1(ROCKY BROOK CULVERT)



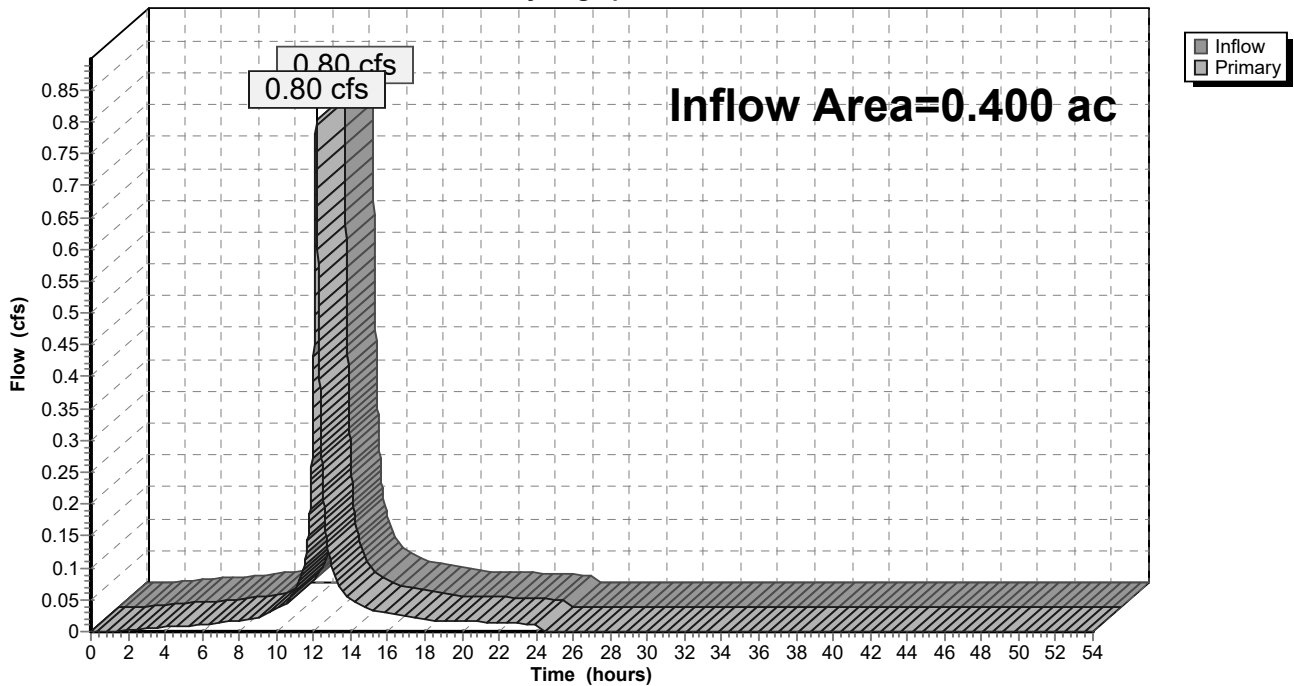
### Summary for Link POA-B2: POA-B2 (BANK ST)

Inflow Area = 0.400 ac, 75.00% Impervious, Inflow Depth = 2.21" for 1-MER 1YR event  
Inflow = 0.80 cfs @ 12.14 hrs, Volume= 0.074 af  
Primary = 0.80 cfs @ 12.14 hrs, Volume= 0.074 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-B2: POA-B2 (BANK ST)

Hydrograph



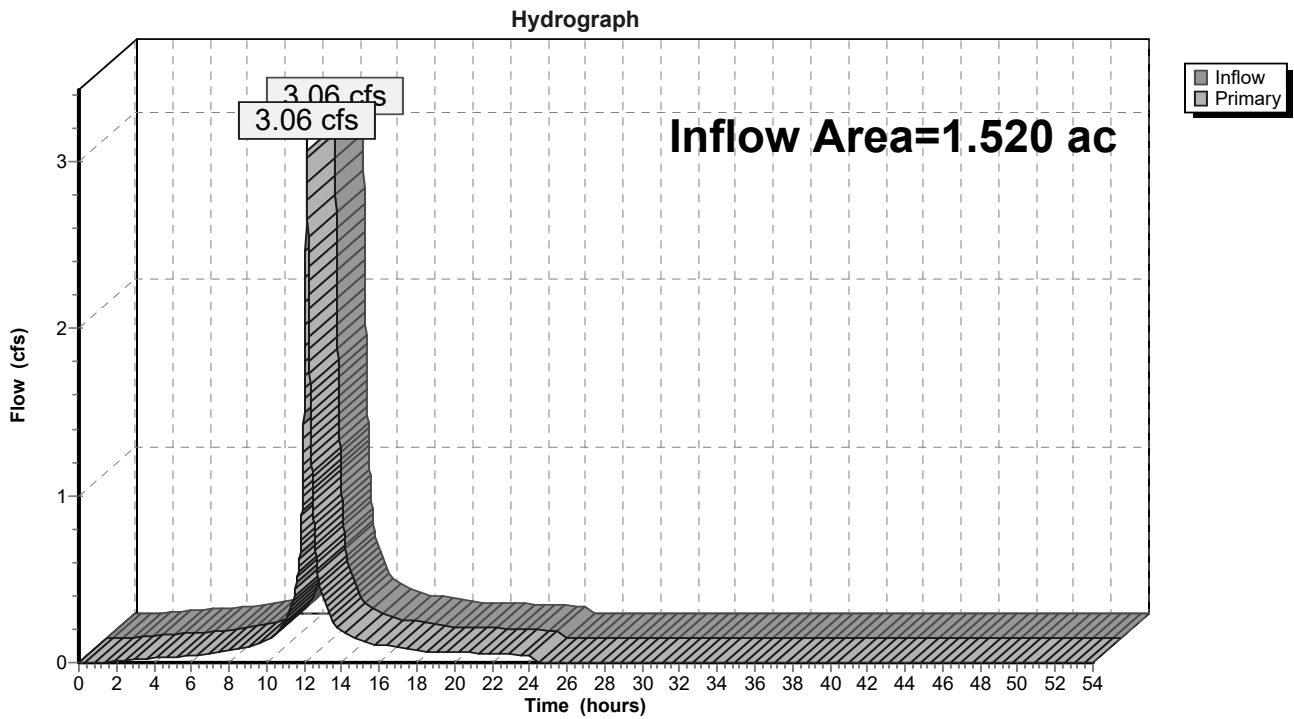


### Summary for Link POA-BIA: POA-B1A (ROCKY BROOK 24" HW)

Inflow Area = 1.520 ac, 77.63% Impervious, Inflow Depth = 2.23" for 1-MER 1YR event  
Inflow = 3.06 cfs @ 12.14 hrs, Volume= 0.282 af  
Primary = 3.06 cfs @ 12.14 hrs, Volume= 0.282 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-BIA: POA-B1A (ROCKY BROOK 24" HW)



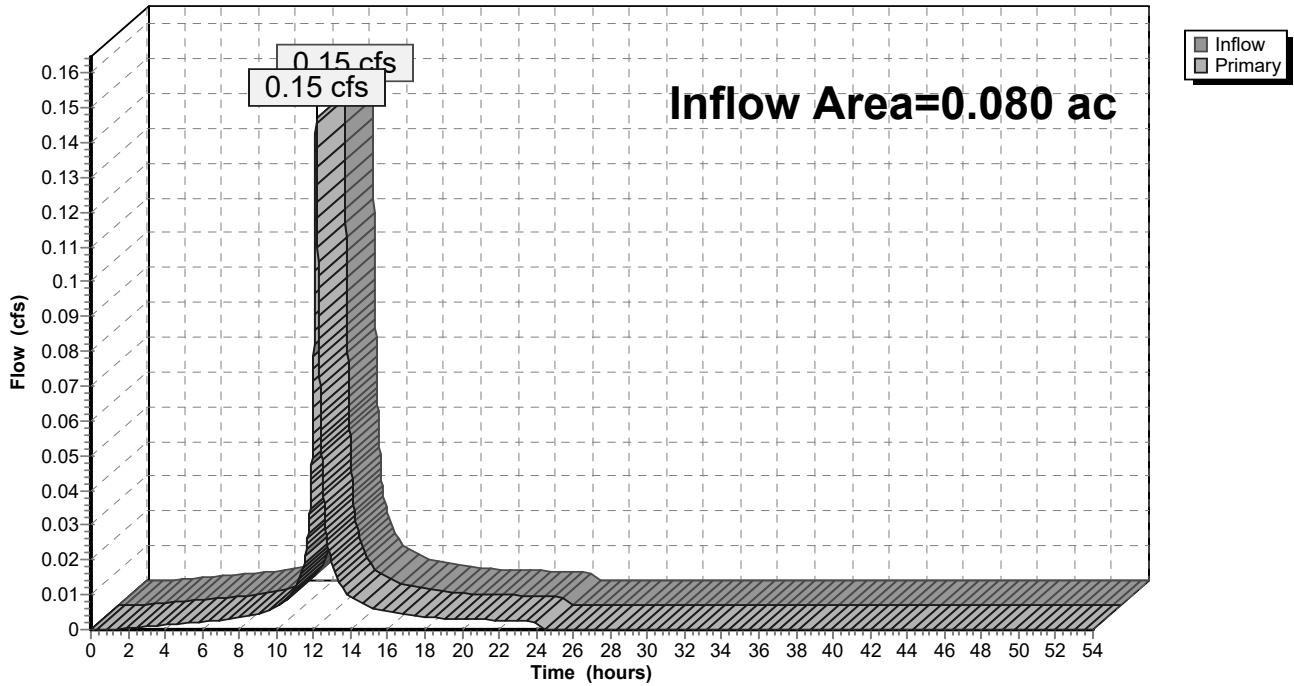
### Summary for Link POA-E3: POA-E3 (12" RCP)

Inflow Area = 0.080 ac, 75.00% Impervious, Inflow Depth = 2.06" for 1-MER 1YR event  
Inflow = 0.15 cfs @ 12.14 hrs, Volume= 0.014 af  
Primary = 0.15 cfs @ 12.14 hrs, Volume= 0.014 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-E3: POA-E3 (12" RCP)

Hydrograph

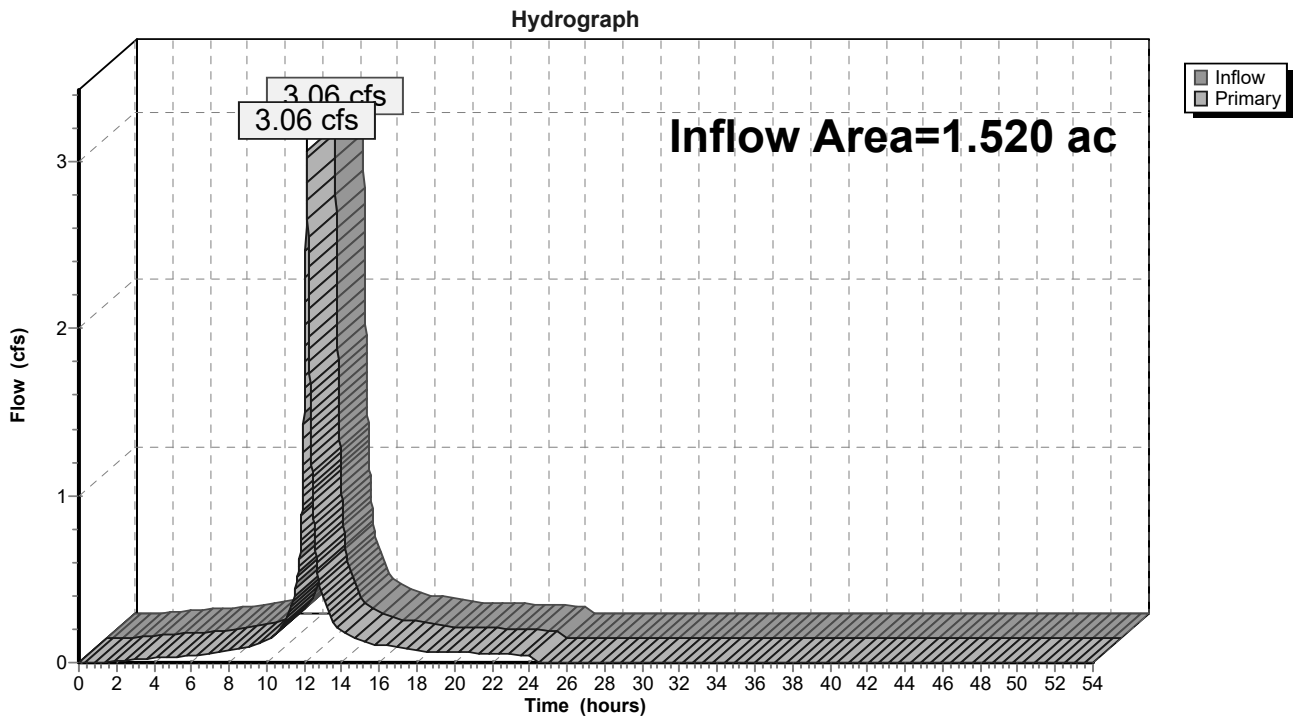


### Summary for Link POA-E4: POA-E4 (24" RCP)

Inflow Area = 1.520 ac, 77.63% Impervious, Inflow Depth = 2.23" for 1-MER 1YR event  
Inflow = 3.06 cfs @ 12.14 hrs, Volume= 0.282 af  
Primary = 3.06 cfs @ 12.14 hrs, Volume= 0.282 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-E4: POA-E4 (24" RCP)



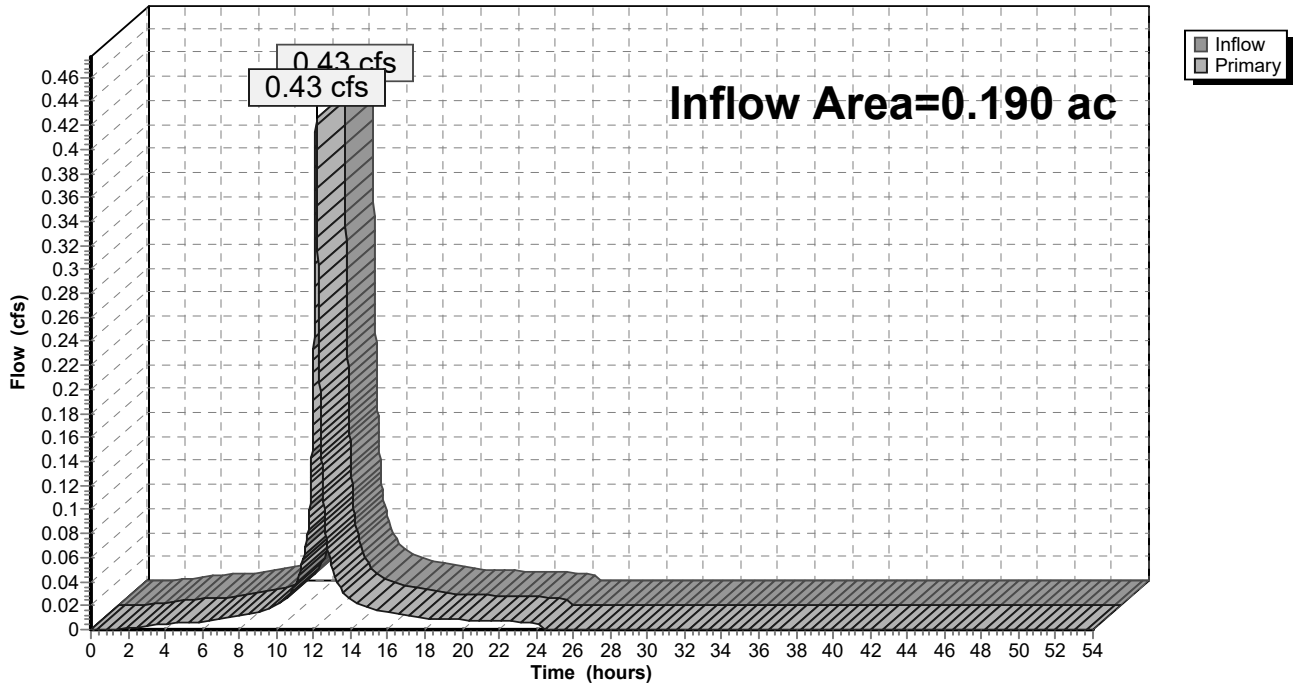
### Summary for Link POA-E5: POA-E5 (10" TER)

Inflow Area = 0.190 ac, 94.74% Impervious, Inflow Depth = 2.51" for 1-MER 1YR event  
Inflow = 0.43 cfs @ 12.14 hrs, Volume= 0.040 af  
Primary = 0.43 cfs @ 12.14 hrs, Volume= 0.040 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-E5: POA-E5 (10" TER)

Hydrograph

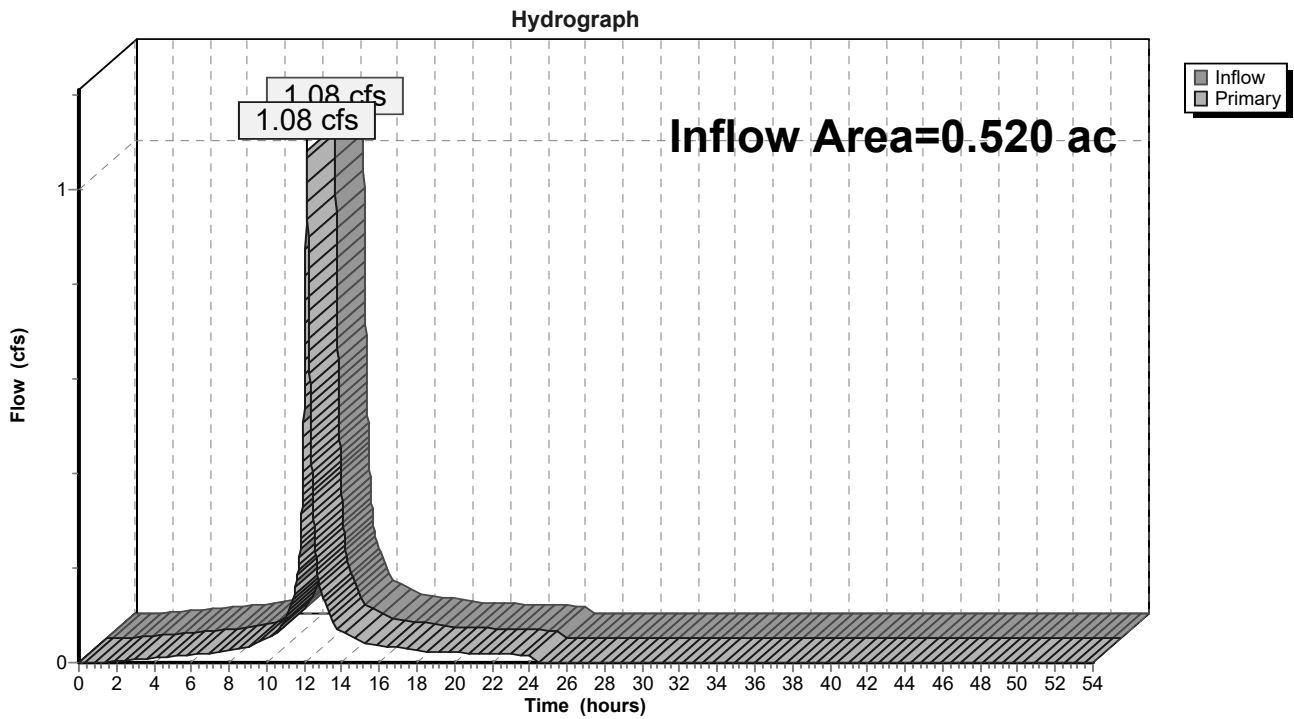


### Summary for Link POA-E6: POA-E6 (8" PVC)

Inflow Area = 0.520 ac, 81.54% Impervious, Inflow Depth = 2.32" for 1-MER 1YR event  
Inflow = 1.08 cfs @ 12.14 hrs, Volume= 0.100 af  
Primary = 1.08 cfs @ 12.14 hrs, Volume= 0.100 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-E6: POA-E6 (8" PVC)



Time span=0.00-54.00 hrs, dt=0.01 hrs, 5401 points  
 Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious  
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

<b>Subcatchment EB-1: EB-1</b>	Runoff Area=0.250 ac 60.00% Impervious Runoff Depth=2.56" Tc=6.0 min CN=84/98 Runoff=0.59 cfs 0.053 af
<b>Subcatchment EB-2: EB-2</b>	Runoff Area=0.080 ac 75.00% Impervious Runoff Depth=2.57" Tc=6.0 min CN=73/98 Runoff=0.18 cfs 0.017 af
<b>Subcatchment EB-3: EB-3</b>	Runoff Area=1.570 ac 30.57% Impervious Runoff Depth=2.34" Tc=6.0 min CN=87/98 Runoff=3.49 cfs 0.306 af
<b>Subcatchment EB-4: EB-4</b>	Runoff Area=1.520 ac 77.63% Impervious Runoff Depth=2.77" Tc=6.0 min CN=83/98 Runoff=3.79 cfs 0.351 af
<b>Subcatchment EB-5: EB-5</b>	Runoff Area=0.190 ac 94.74% Impervious Runoff Depth=3.08" Tc=6.0 min CN=98/98 Runoff=0.52 cfs 0.049 af
<b>Subcatchment EB-6: EB-6</b>	Runoff Area=0.380 ac 92.89% Impervious Runoff Depth=3.08" Tc=6.0 min CN=98/98 Runoff=1.03 cfs 0.097 af
<b>Subcatchment EB-7: EB-7</b>	Runoff Area=0.140 ac 50.71% Impervious Runoff Depth=2.29" Tc=6.0 min CN=80/98 Runoff=0.30 cfs 0.027 af
<b>Subcatchment EB-8-ROW: EB-8-ROW</b>	Runoff Area=0.150 ac 100.00% Impervious Runoff Depth=3.08" Tc=6.0 min CN=0/98 Runoff=0.41 cfs 0.038 af
<b>Link POA-B1: POA-B1(ROCKY BROOK CULVERT)</b>	Inflow=9.31 cfs 0.847 af Primary=9.31 cfs 0.847 af
<b>Link POA-B2: POA-B2 (BANK ST)</b>	Inflow=0.99 cfs 0.092 af Primary=0.99 cfs 0.092 af
<b>Link POA-BIA: POA-B1A (ROCKY BROOK 24" HW)</b>	Inflow=3.79 cfs 0.351 af Primary=3.79 cfs 0.351 af
<b>Link POA-E3: POA-E3 (12" RCP)</b>	Inflow=0.18 cfs 0.017 af Primary=0.18 cfs 0.017 af
<b>Link POA-E4: POA-E4 (24" RCP)</b>	Inflow=3.79 cfs 0.351 af Primary=3.79 cfs 0.351 af
<b>Link POA-E5: POA-E5 (10" TER)</b>	Inflow=0.52 cfs 0.049 af Primary=0.52 cfs 0.049 af
<b>Link POA-E6: POA-E6 (8" PVC)</b>	Inflow=1.33 cfs 0.124 af Primary=1.33 cfs 0.124 af

**Total Runoff Area = 4.280 ac Runoff Volume = 0.938 af Average Runoff Depth = 2.63"**  
**38.69% Pervious = 1.656 ac 61.31% Impervious = 2.624 ac**

**Summary for Subcatchment EB-1: EB-1**

Runoff = 0.59 cfs @ 12.14 hrs, Volume= 0.053 af, Depth= 2.56"

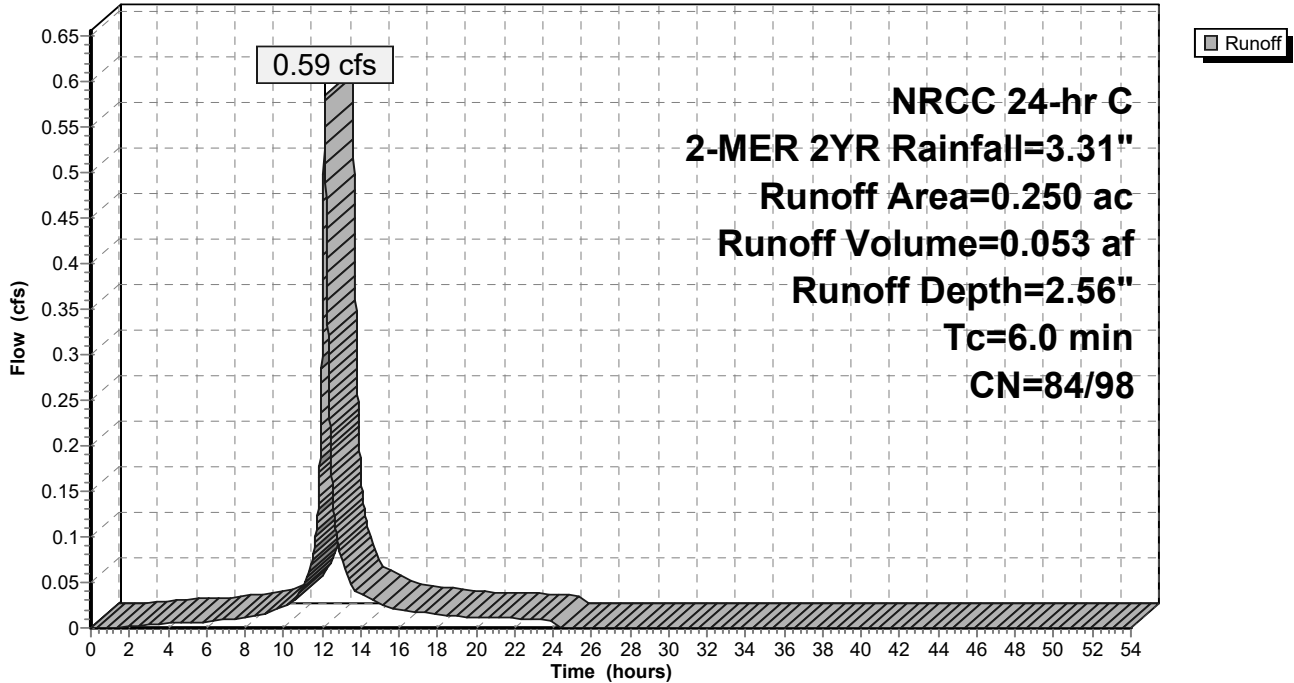
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 2-MER 2YR Rainfall=3.31"

Area (ac)	CN	Description
0.150	98	Roofs, HSG C
0.020	98	Unconnected pavement, HSG D
0.080	80	>75% Grass cover, Good, HSG D
0.250	92	Weighted Average
0.100	84	40.00% Pervious Area
0.150	98	60.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EB-1: EB-1**

Hydrograph



**Summary for Subcatchment EB-2: EB-2**

Runoff = 0.18 cfs @ 12.14 hrs, Volume= 0.017 af, Depth= 2.57"

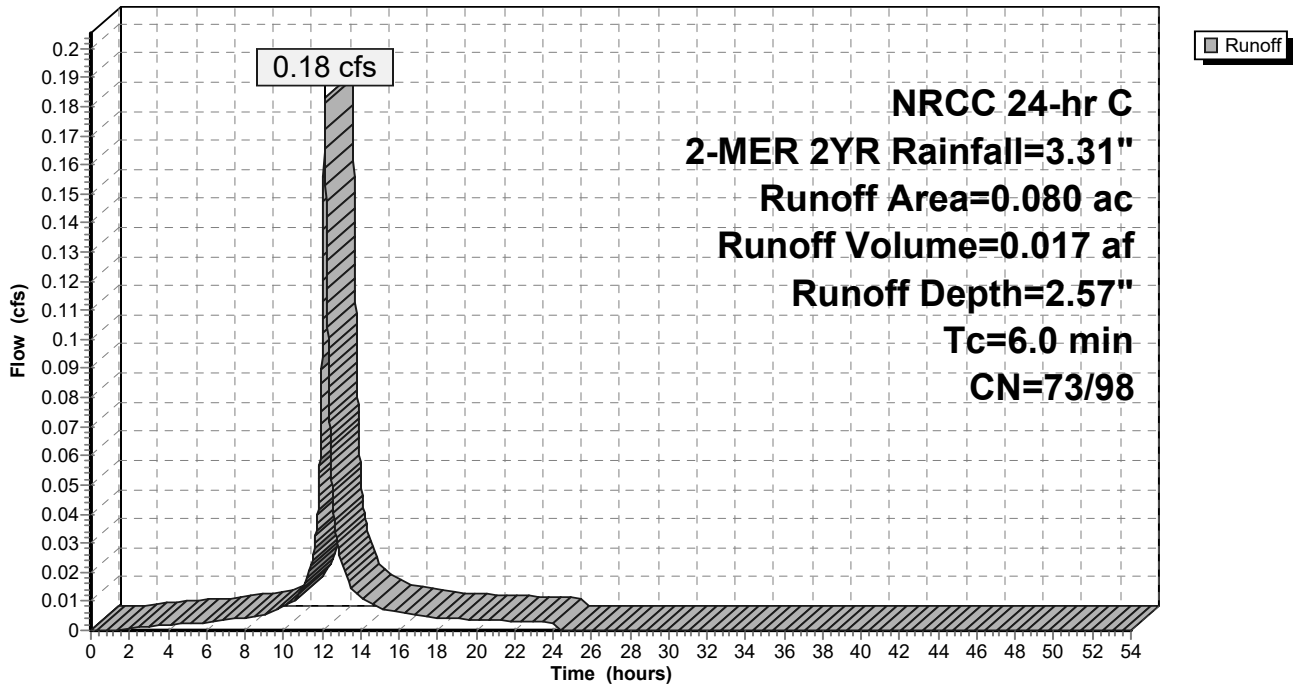
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 2-MER 2YR Rainfall=3.31"

Area (ac)	CN	Description
0.060	98	Roofs, HSG D
0.020	73	Brush, Good, HSG D
0.080	92	Weighted Average
0.020	73	25.00% Pervious Area
0.060	98	75.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EB-2: EB-2**

Hydrograph





**Summary for Subcatchment EB-3: EB-3**

Runoff = 3.49 cfs @ 12.14 hrs, Volume= 0.306 af, Depth= 2.34"

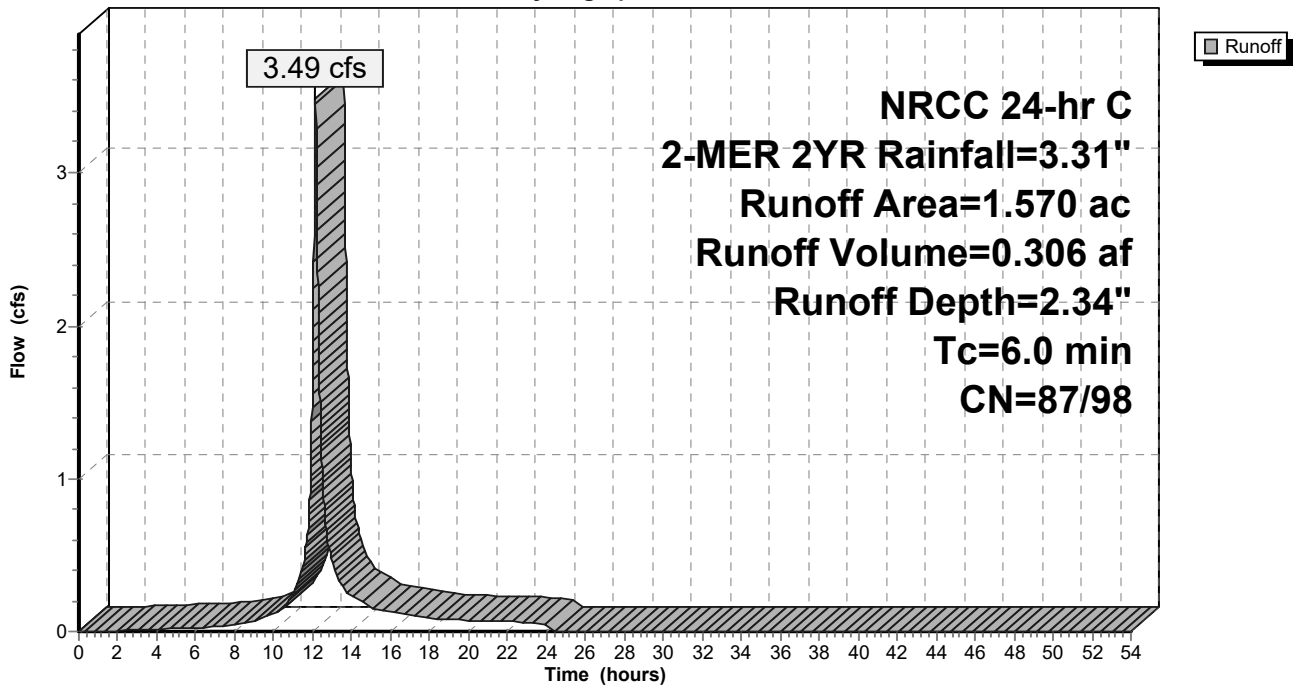
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 2-MER 2YR Rainfall=3.31"

Area (ac)	CN	Description
0.300	98	Roofs, HSG C
0.600	91	Gravel roads, HSG D
0.160	98	Paved parking, HSG D
0.350	80	>75% Grass cover, Good, HSG D
* 0.140	86	Wetlands
0.020	98	Roofs, HSG C
1.570	90	Weighted Average
1.090	87	69.43% Pervious Area
0.480	98	30.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EB-3: EB-3**

Hydrograph



**Summary for Subcatchment EB-4: EB-4**

Runoff = 3.79 cfs @ 12.14 hrs, Volume= 0.351 af, Depth= 2.77"

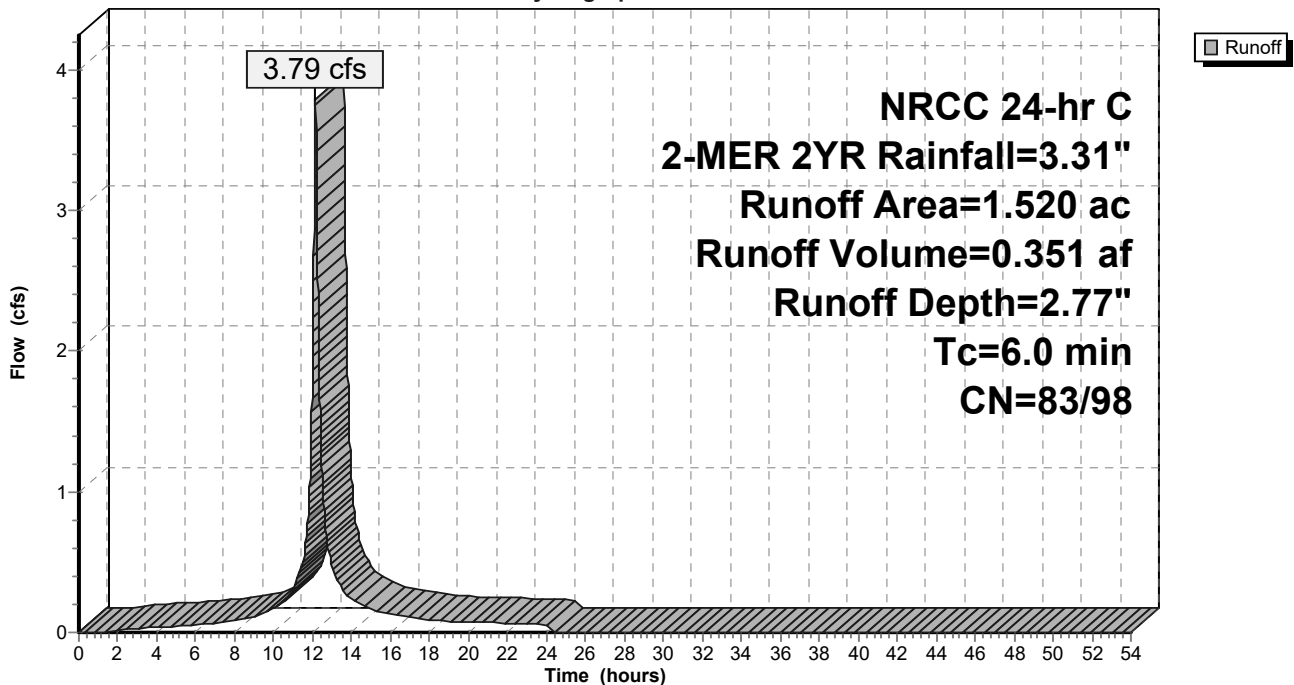
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 2-MER 2YR Rainfall=3.31"

Area (ac)	CN	Description
* 0.230	98	Roofs
* 0.050	98	Unconnected pavement
* 0.950	98	Paved parking
0.290	80	>75% Grass cover, Good, HSG D
1.520	95	Weighted Average
0.340	83	22.37% Pervious Area
1.180	98	77.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EB-4: EB-4**

Hydrograph



**Summary for Subcatchment EB-5: EB-5**

Runoff = 0.52 cfs @ 12.14 hrs, Volume= 0.049 af, Depth= 3.08"

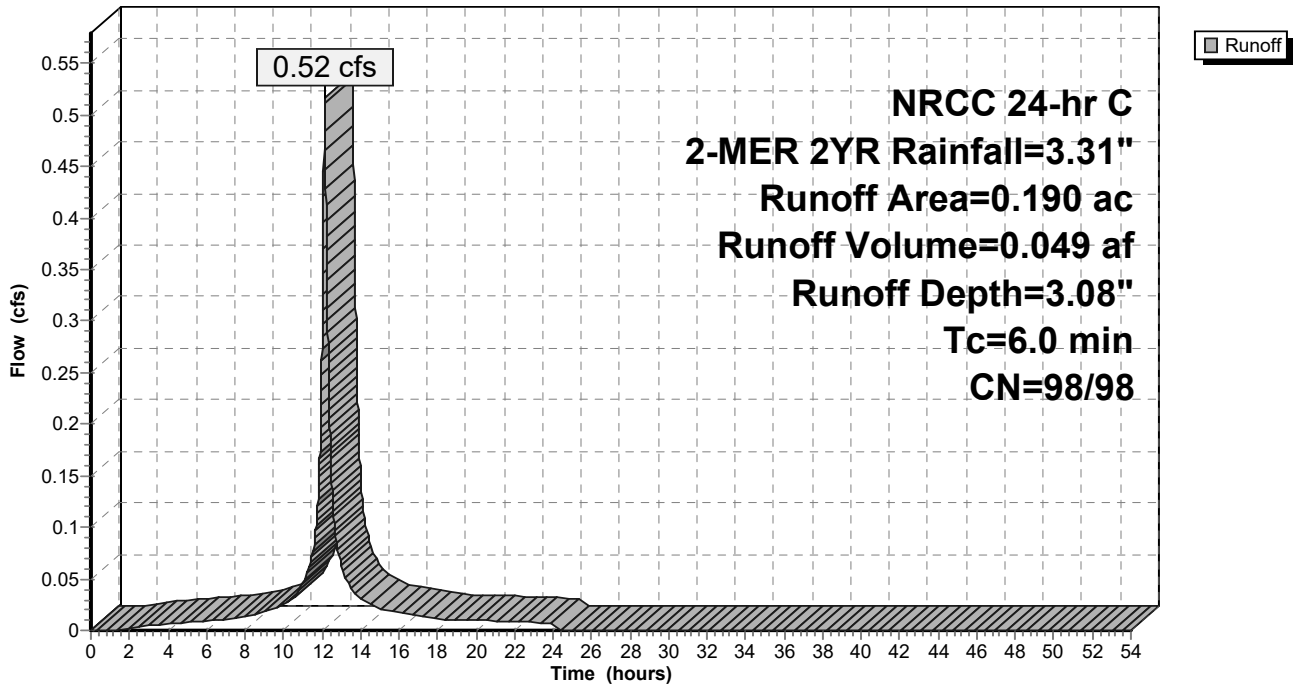
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 2-MER 2YR Rainfall=3.31"

Area (ac)	CN	Description
* 0.010	98	Unconnected pavement
* 0.180	98	Paved parking
0.190	98	Weighted Average
0.010	98	5.26% Pervious Area
0.180	98	94.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EB-5: EB-5**

Hydrograph



**Summary for Subcatchment EB-6: EB-6**

Runoff = 1.03 cfs @ 12.14 hrs, Volume= 0.097 af, Depth= 3.08"

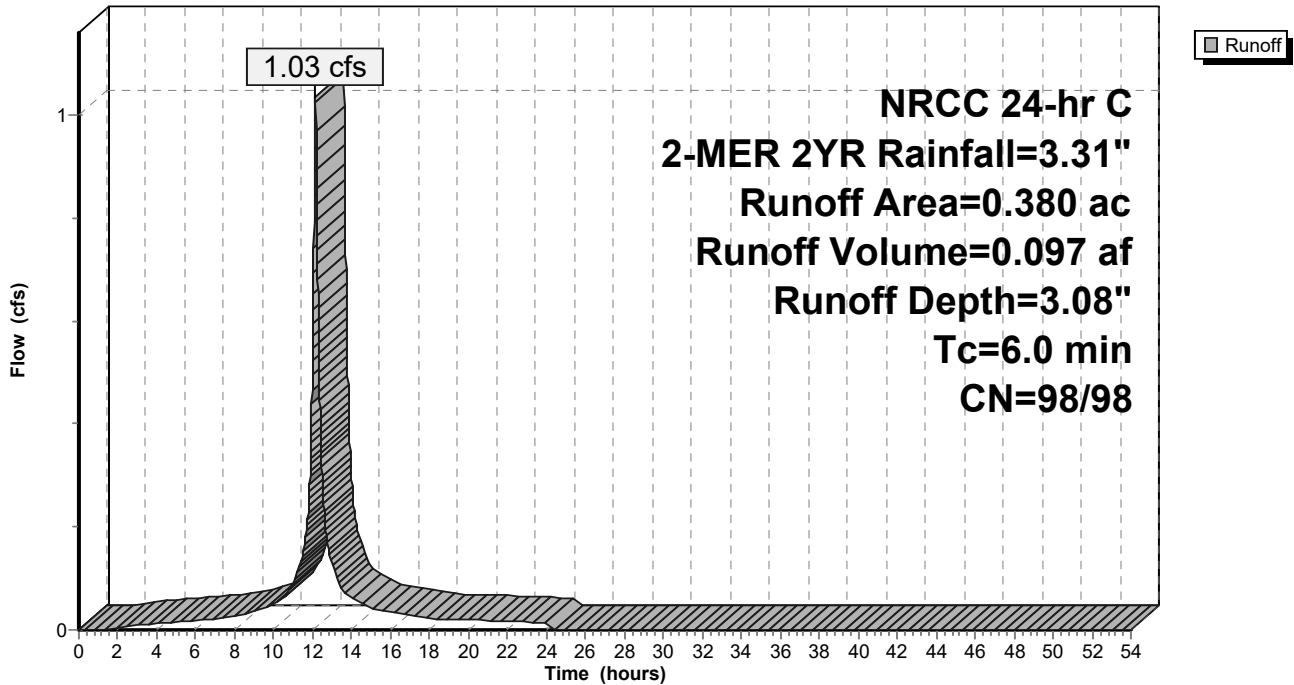
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 2-MER 2YR Rainfall=3.31"

Area (ac)	CN	Description
* 0.251	98	Roofs
* 0.027	98	Unconnected pavement
* 0.102	98	Paved parking
0.380	98	Weighted Average
0.027	98	7.11% Pervious Area
0.353	98	92.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EB-6: EB-6**

Hydrograph



**Summary for Subcatchment EB-7: EB-7**

Runoff = 0.30 cfs @ 12.14 hrs, Volume= 0.027 af, Depth= 2.29"

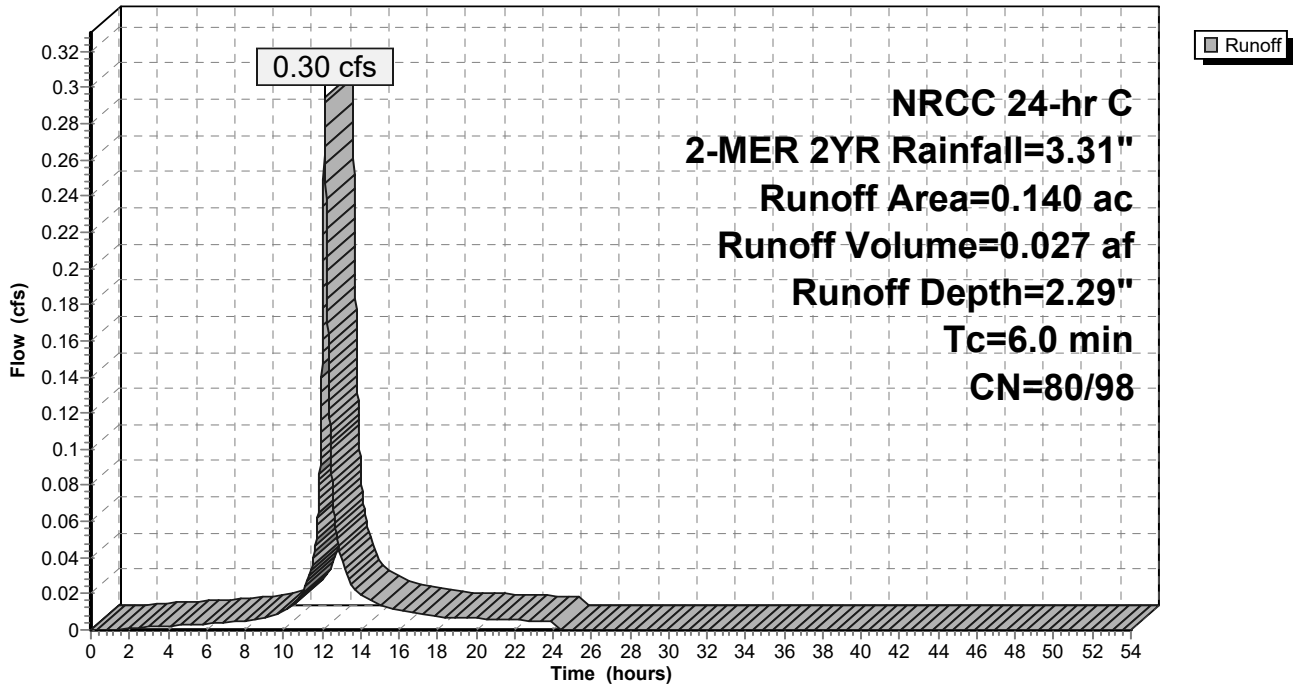
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 2-MER 2YR Rainfall=3.31"

Area (ac)	CN	Description
0.031	98	Paved parking, HSG D
0.040	98	Roofs, HSG D
0.069	80	>75% Grass cover, Good, HSG D
0.140	89	Weighted Average
0.069	80	49.29% Pervious Area
0.071	98	50.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EB-7: EB-7**

Hydrograph



**Summary for Subcatchment EB-8-ROW: EB-8-ROW**

Runoff = 0.41 cfs @ 12.14 hrs, Volume= 0.038 af, Depth= 3.08"

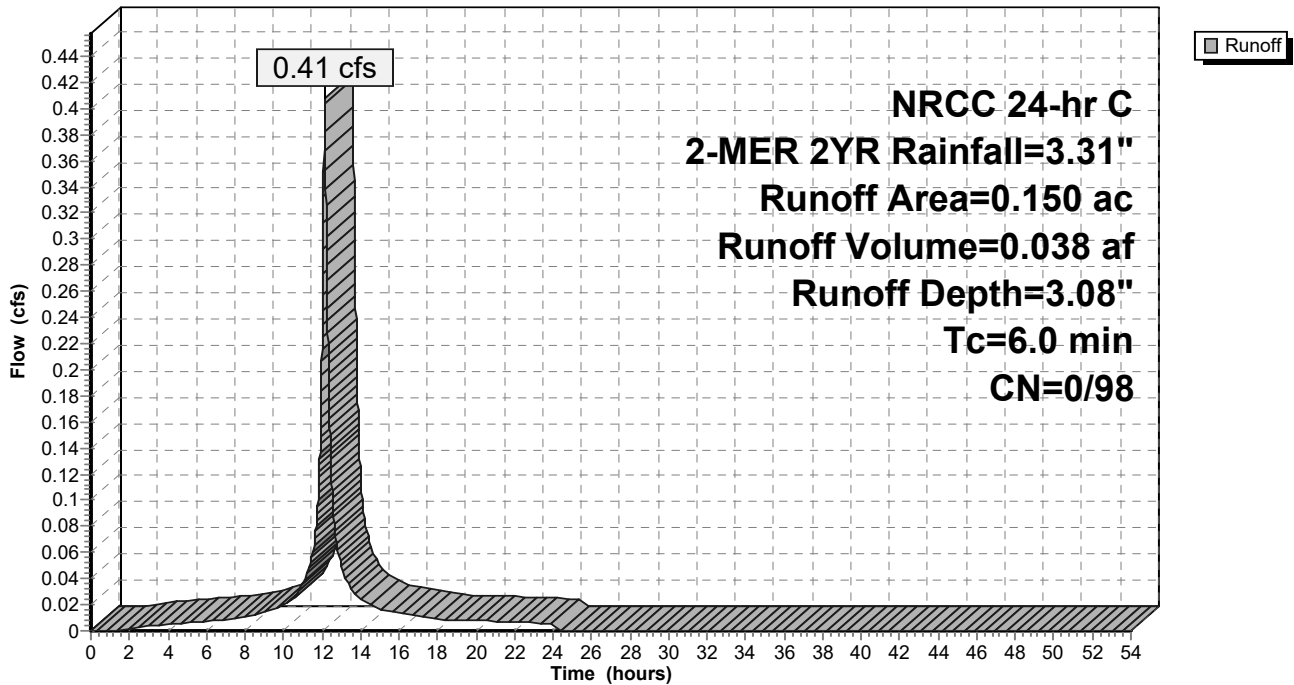
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 2-MER 2YR Rainfall=3.31"

Area (ac)	CN	Description
0.150	98	Paved parking, HSG D
0.150	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EB-8-ROW: EB-8-ROW**

Hydrograph

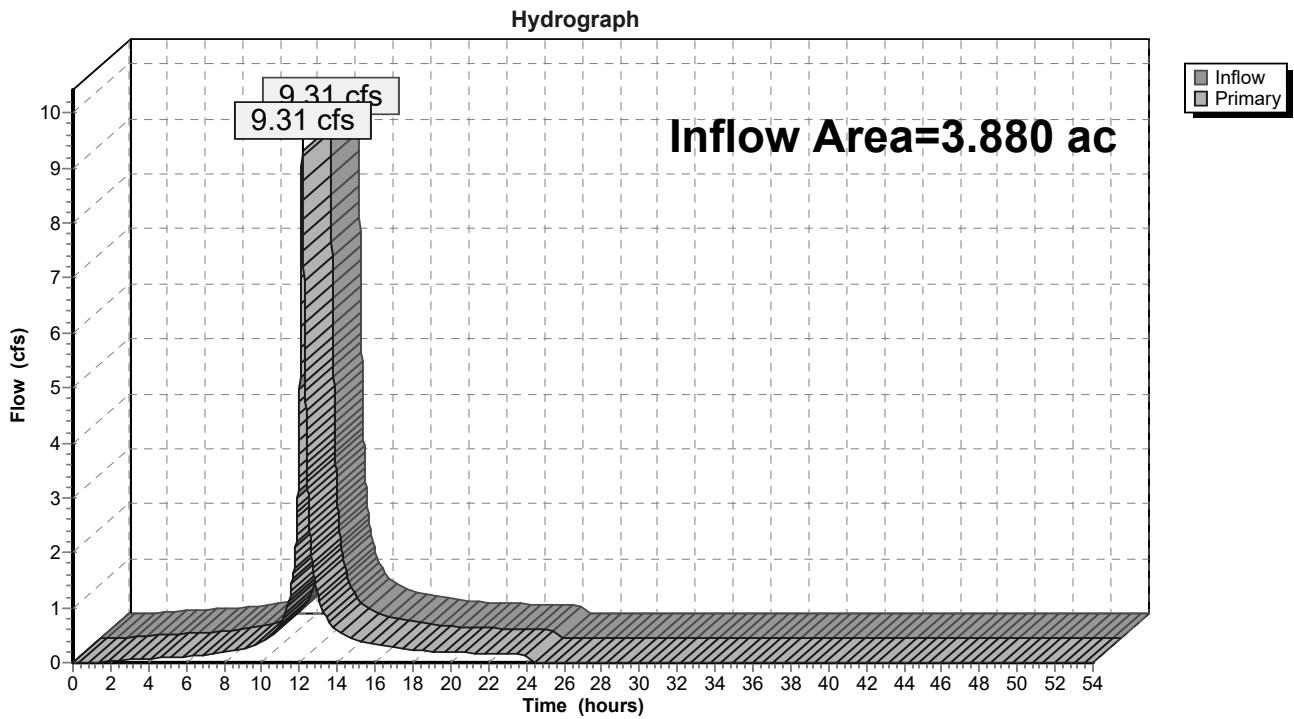


### Summary for Link POA-B1: POA-B1(ROCKY BROOK CULVERT)

Inflow Area = 3.880 ac, 59.90% Impervious, Inflow Depth = 2.62" for 2-MER 2YR event  
Inflow = 9.31 cfs @ 12.14 hrs, Volume= 0.847 af  
Primary = 9.31 cfs @ 12.14 hrs, Volume= 0.847 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-B1: POA-B1(ROCKY BROOK CULVERT)

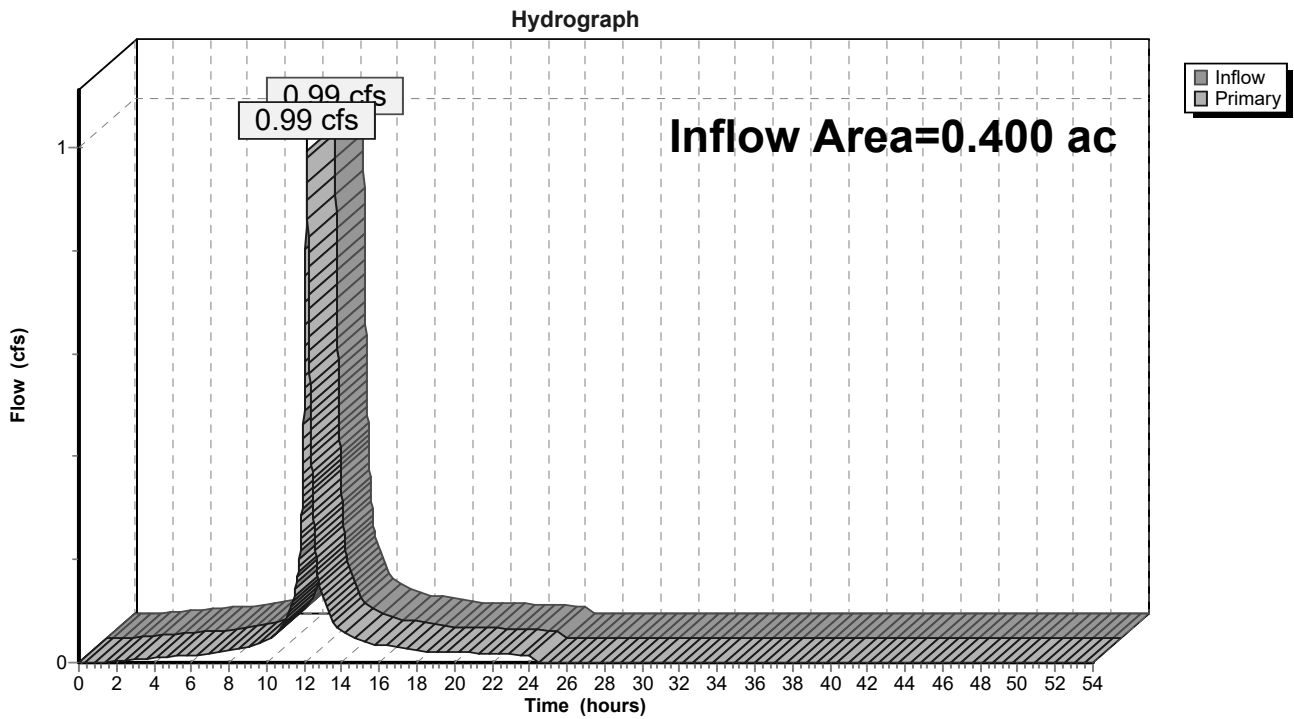


### Summary for Link POA-B2: POA-B2 (BANK ST)

Inflow Area = 0.400 ac, 75.00% Impervious, Inflow Depth = 2.75" for 2-MER 2YR event  
Inflow = 0.99 cfs @ 12.14 hrs, Volume= 0.092 af  
Primary = 0.99 cfs @ 12.14 hrs, Volume= 0.092 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-B2: POA-B2 (BANK ST)



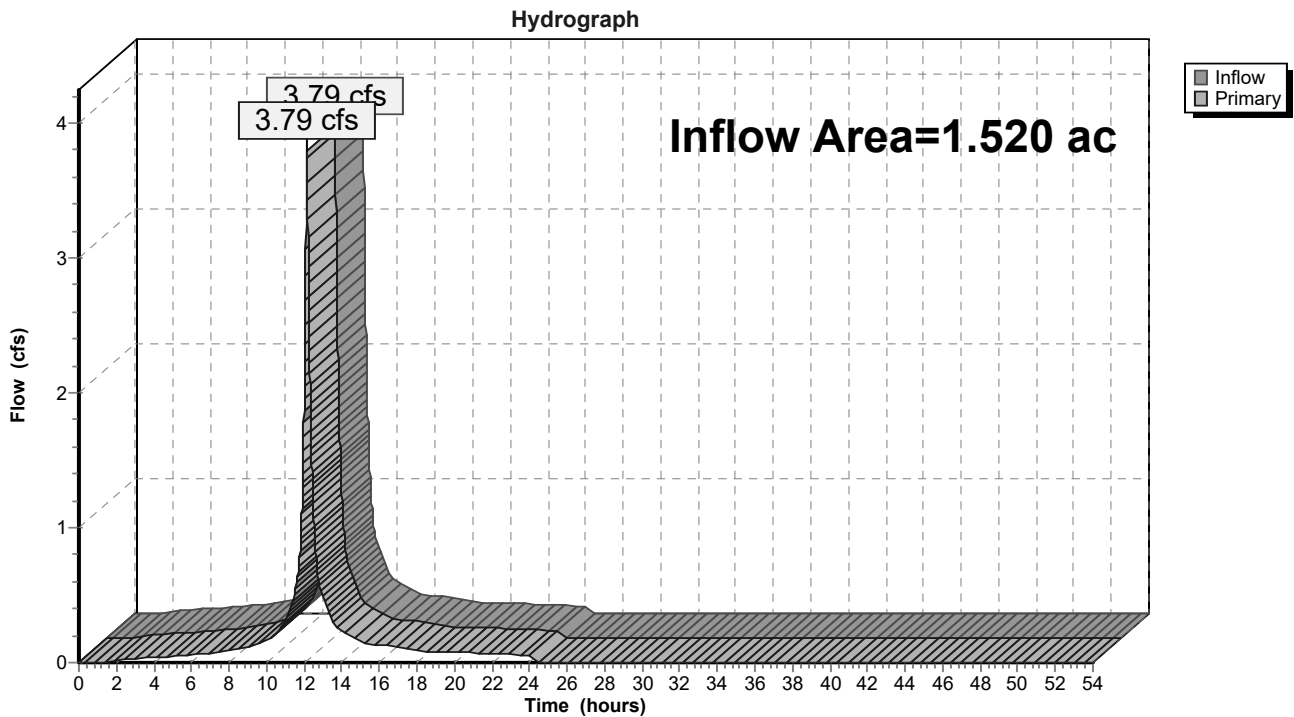


### Summary for Link POA-BIA: POA-B1A (ROCKY BROOK 24" HW)

Inflow Area = 1.520 ac, 77.63% Impervious, Inflow Depth = 2.77" for 2-MER 2YR event  
Inflow = 3.79 cfs @ 12.14 hrs, Volume= 0.351 af  
Primary = 3.79 cfs @ 12.14 hrs, Volume= 0.351 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-BIA: POA-B1A (ROCKY BROOK 24" HW)



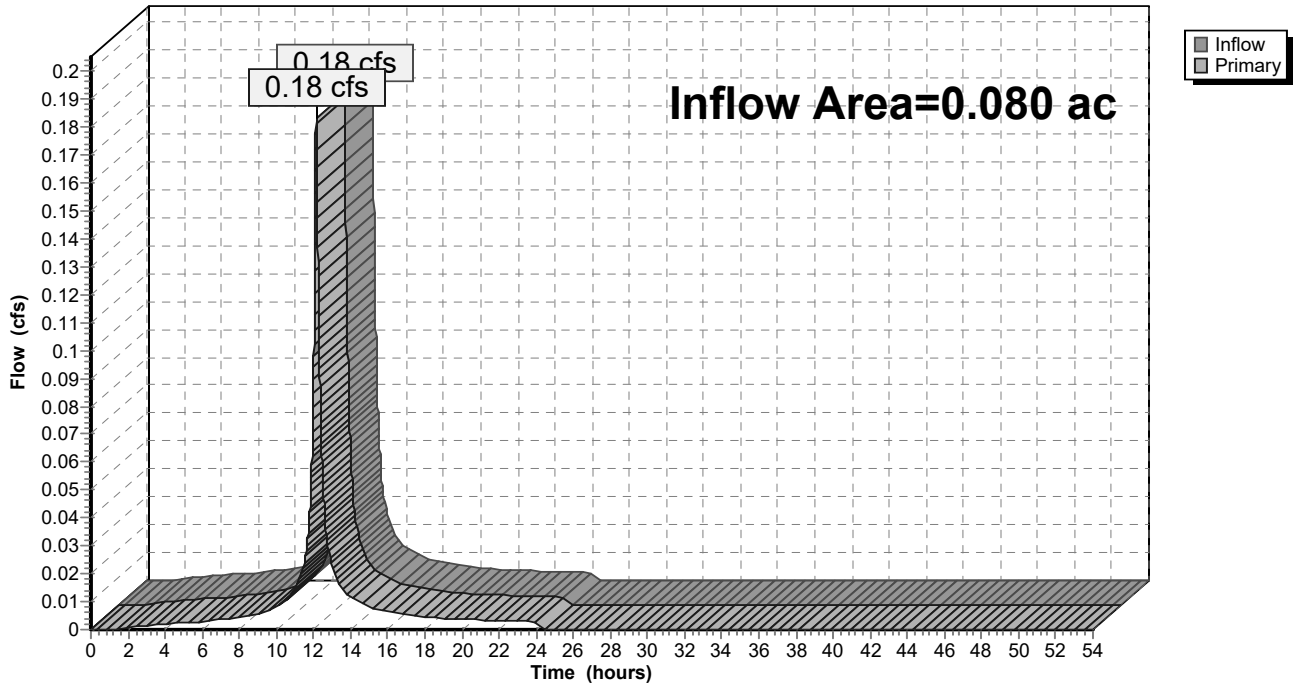
### Summary for Link POA-E3: POA-E3 (12" RCP)

Inflow Area = 0.080 ac, 75.00% Impervious, Inflow Depth = 2.57" for 2-MER 2YR event  
Inflow = 0.18 cfs @ 12.14 hrs, Volume= 0.017 af  
Primary = 0.18 cfs @ 12.14 hrs, Volume= 0.017 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-E3: POA-E3 (12" RCP)

Hydrograph

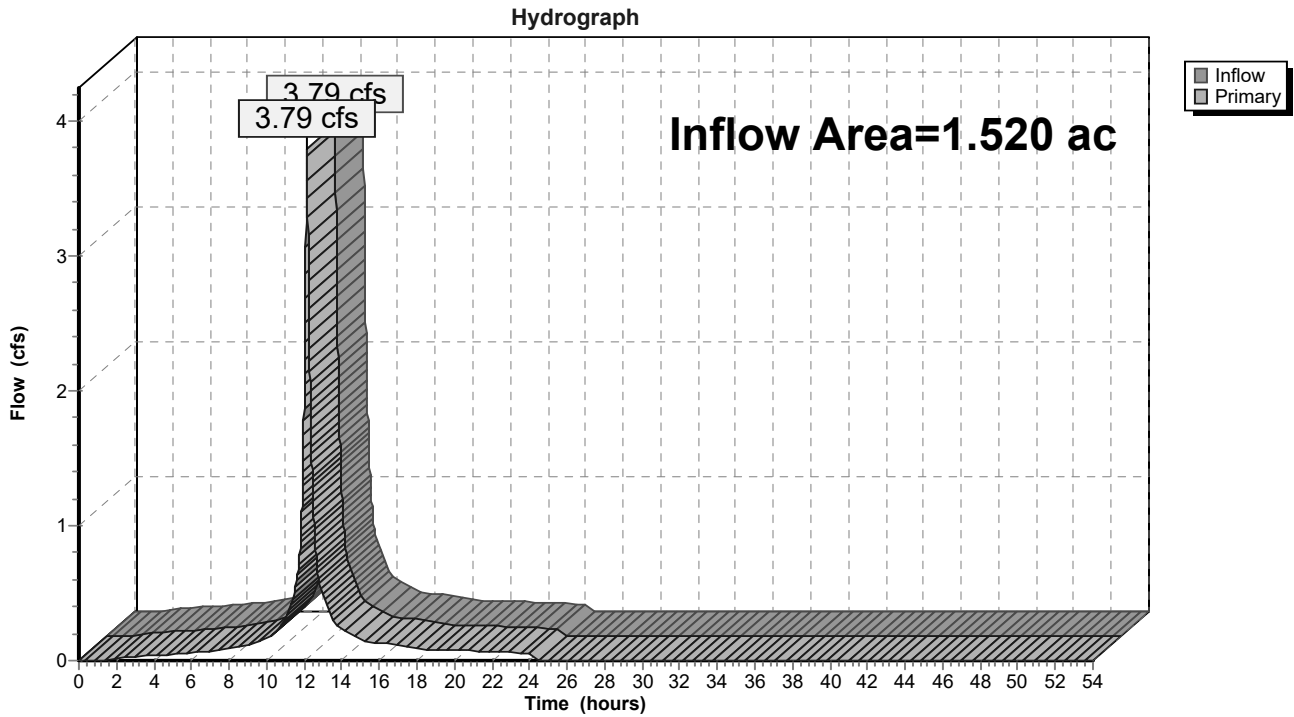


### Summary for Link POA-E4: POA-E4 (24" RCP)

Inflow Area = 1.520 ac, 77.63% Impervious, Inflow Depth = 2.77" for 2-MER 2YR event  
Inflow = 3.79 cfs @ 12.14 hrs, Volume= 0.351 af  
Primary = 3.79 cfs @ 12.14 hrs, Volume= 0.351 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-E4: POA-E4 (24" RCP)



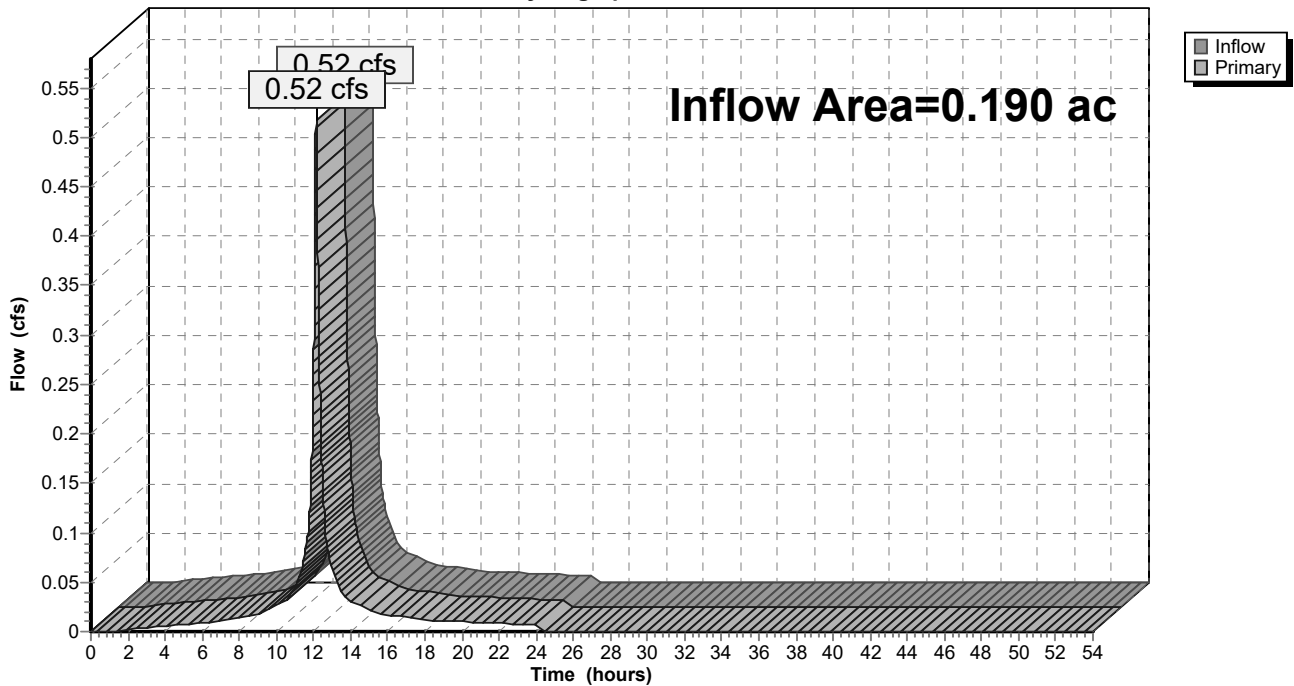
### Summary for Link POA-E5: POA-E5 (10" TER)

Inflow Area = 0.190 ac, 94.74% Impervious, Inflow Depth = 3.08" for 2-MER 2YR event  
Inflow = 0.52 cfs @ 12.14 hrs, Volume= 0.049 af  
Primary = 0.52 cfs @ 12.14 hrs, Volume= 0.049 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-E5: POA-E5 (10" TER)

Hydrograph

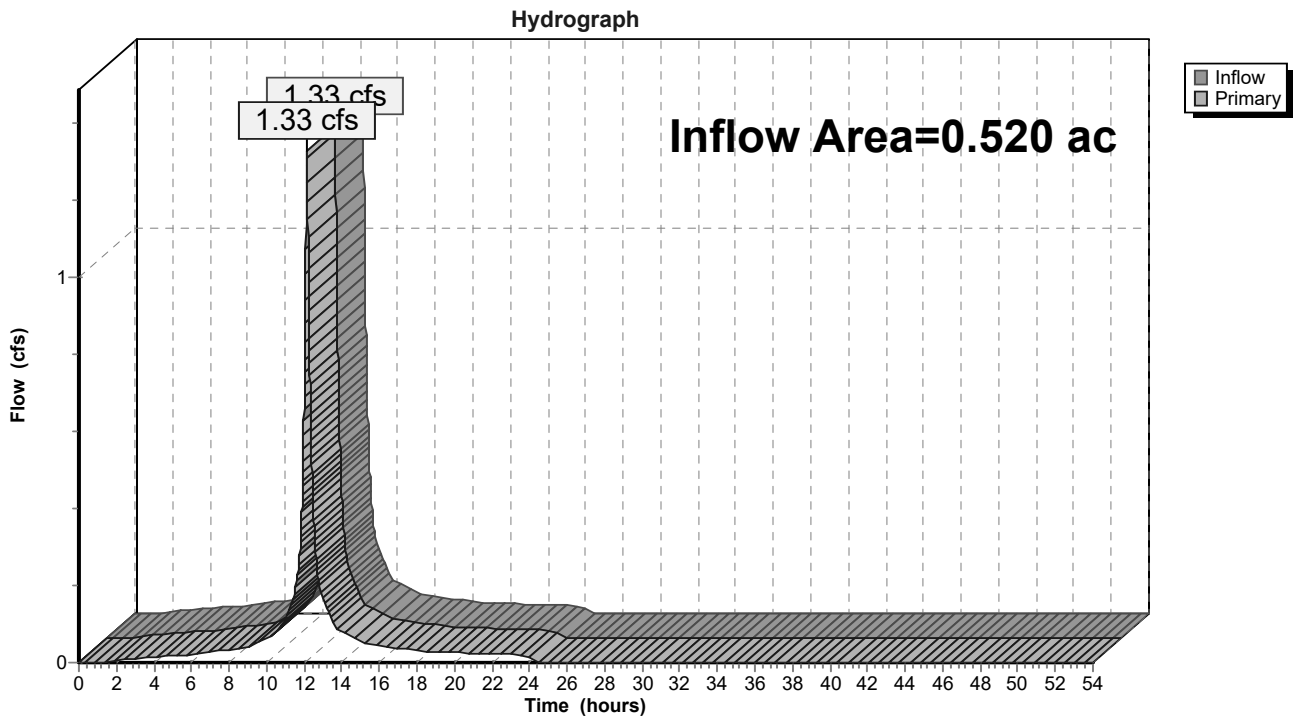


### Summary for Link POA-E6: POA-E6 (8" PVC)

Inflow Area = 0.520 ac, 81.54% Impervious, Inflow Depth = 2.87" for 2-MER 2YR event  
Inflow = 1.33 cfs @ 12.14 hrs, Volume= 0.124 af  
Primary = 1.33 cfs @ 12.14 hrs, Volume= 0.124 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-E6: POA-E6 (8" PVC)



Time span=0.00-54.00 hrs, dt=0.01 hrs, 5401 points  
 Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious  
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

<b>Subcatchment EB-1: EB-1</b>	Runoff Area=0.250 ac 60.00% Impervious Runoff Depth=4.19" Tc=6.0 min CN=84/98 Runoff=0.95 cfs 0.087 af
<b>Subcatchment EB-2: EB-2</b>	Runoff Area=0.080 ac 75.00% Impervious Runoff Depth=4.16" Tc=6.0 min CN=73/98 Runoff=0.30 cfs 0.028 af
<b>Subcatchment EB-3: EB-3</b>	Runoff Area=1.570 ac 30.57% Impervious Runoff Depth=3.95" Tc=6.0 min CN=87/98 Runoff=5.81 cfs 0.517 af
<b>Subcatchment EB-4: EB-4</b>	Runoff Area=1.520 ac 77.63% Impervious Runoff Depth=4.43" Tc=6.0 min CN=83/98 Runoff=5.98 cfs 0.561 af
<b>Subcatchment EB-5: EB-5</b>	Runoff Area=0.190 ac 94.74% Impervious Runoff Depth=4.78" Tc=6.0 min CN=98/98 Runoff=0.79 cfs 0.076 af
<b>Subcatchment EB-6: EB-6</b>	Runoff Area=0.380 ac 92.89% Impervious Runoff Depth=4.78" Tc=6.0 min CN=98/98 Runoff=1.58 cfs 0.151 af
<b>Subcatchment EB-7: EB-7</b>	Runoff Area=0.140 ac 50.71% Impervious Runoff Depth=3.86" Tc=6.0 min CN=80/98 Runoff=0.50 cfs 0.045 af
<b>Subcatchment EB-8-ROW: EB-8-ROW</b>	Runoff Area=0.150 ac 100.00% Impervious Runoff Depth=4.78" Tc=6.0 min CN=0/98 Runoff=0.62 cfs 0.060 af
<b>Link POA-B1: POA-B1(ROCKY BROOK CULVERT)</b>	Inflow=14.96 cfs 1.378 af Primary=14.96 cfs 1.378 af
<b>Link POA-B2: POA-B2 (BANK ST)</b>	Inflow=1.57 cfs 0.147 af Primary=1.57 cfs 0.147 af
<b>Link POA-BIA: POA-B1A (ROCKY BROOK 24" HW)</b>	Inflow=5.98 cfs 0.561 af Primary=5.98 cfs 0.561 af
<b>Link POA-E3: POA-E3 (12" RCP)</b>	Inflow=0.30 cfs 0.028 af Primary=0.30 cfs 0.028 af
<b>Link POA-E4: POA-E4 (24" RCP)</b>	Inflow=5.98 cfs 0.561 af Primary=5.98 cfs 0.561 af
<b>Link POA-E5: POA-E5 (10" TER)</b>	Inflow=0.79 cfs 0.076 af Primary=0.79 cfs 0.076 af
<b>Link POA-E6: POA-E6 (8" PVC)</b>	Inflow=2.08 cfs 0.197 af Primary=2.08 cfs 0.197 af

**Total Runoff Area = 4.280 ac Runoff Volume = 1.525 af Average Runoff Depth = 4.28"**  
**38.69% Pervious = 1.656 ac 61.31% Impervious = 2.624 ac**

**Summary for Subcatchment EB-1: EB-1**

Runoff = 0.95 cfs @ 12.14 hrs, Volume= 0.087 af, Depth= 4.19"

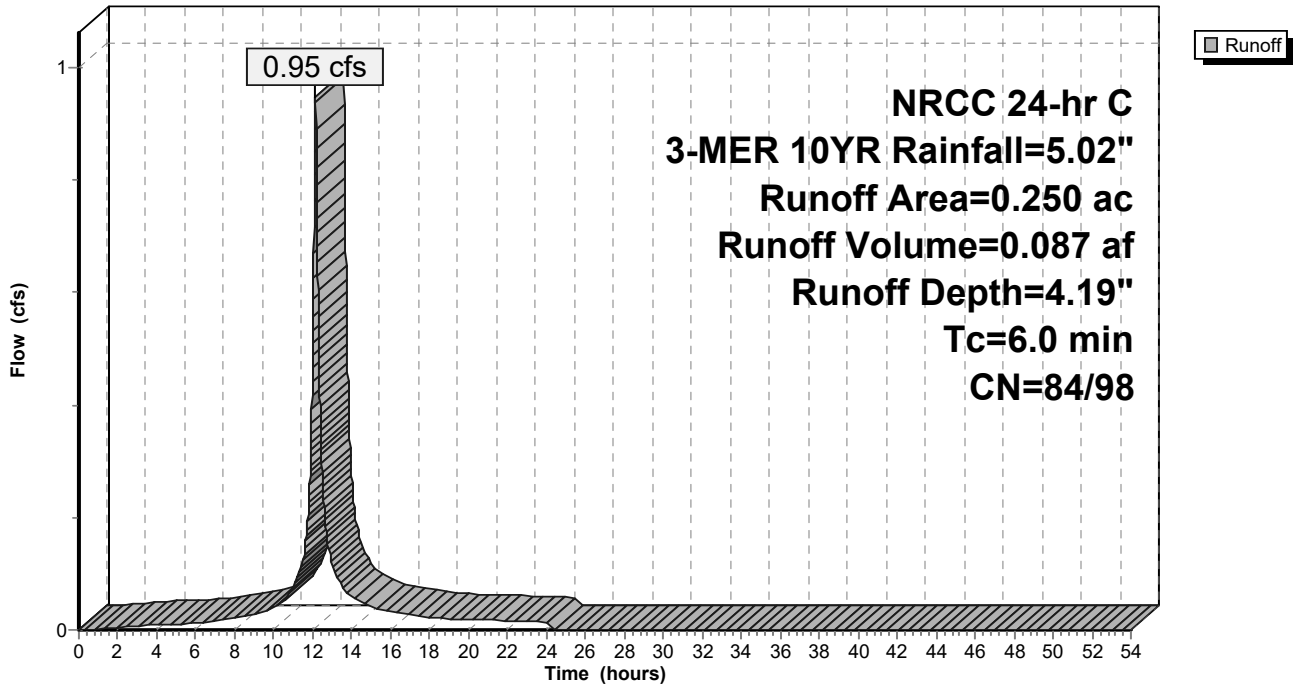
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 3-MER 10YR Rainfall=5.02"

Area (ac)	CN	Description
0.150	98	Roofs, HSG C
0.020	98	Unconnected pavement, HSG D
0.080	80	>75% Grass cover, Good, HSG D
0.250	92	Weighted Average
0.100	84	40.00% Pervious Area
0.150	98	60.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EB-1: EB-1**

Hydrograph



### Summary for Subcatchment EB-2: EB-2

Runoff = 0.30 cfs @ 12.14 hrs, Volume= 0.028 af, Depth= 4.16"

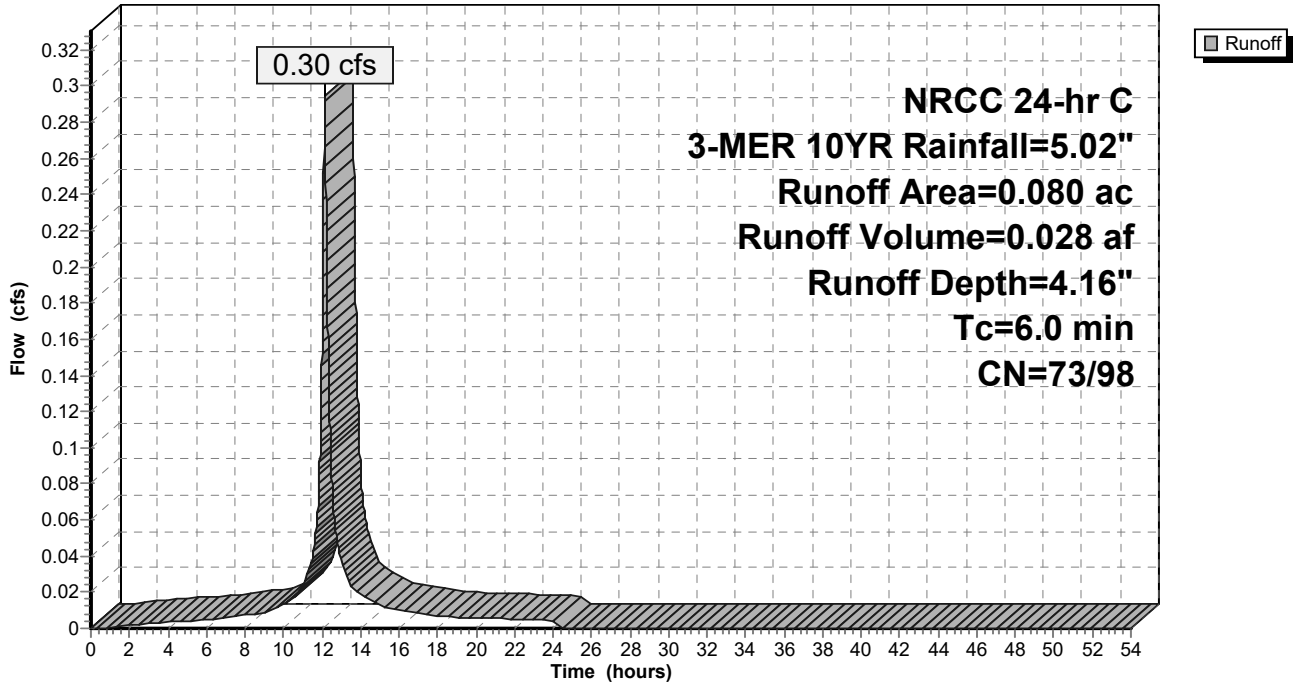
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 3-MER 10YR Rainfall=5.02"

Area (ac)	CN	Description
0.060	98	Roofs, HSG D
0.020	73	Brush, Good, HSG D
0.080	92	Weighted Average
0.020	73	25.00% Pervious Area
0.060	98	75.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

### Subcatchment EB-2: EB-2

Hydrograph





**Summary for Subcatchment EB-3: EB-3**

Runoff = 5.81 cfs @ 12.14 hrs, Volume= 0.517 af, Depth= 3.95"

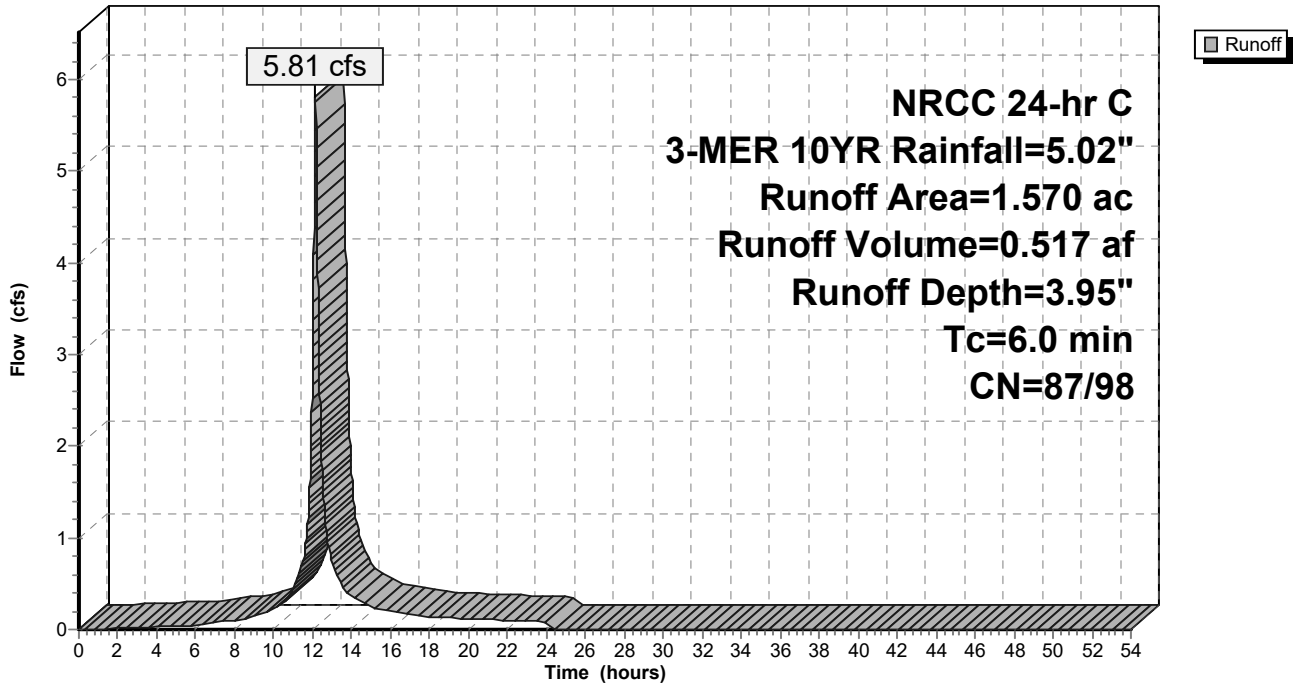
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 3-MER 10YR Rainfall=5.02"

Area (ac)	CN	Description
0.300	98	Roofs, HSG C
0.600	91	Gravel roads, HSG D
0.160	98	Paved parking, HSG D
0.350	80	>75% Grass cover, Good, HSG D
* 0.140	86	Wetlands
0.020	98	Roofs, HSG C
1.570	90	Weighted Average
1.090	87	69.43% Pervious Area
0.480	98	30.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EB-3: EB-3**

Hydrograph



### Summary for Subcatchment EB-4: EB-4

Runoff = 5.98 cfs @ 12.14 hrs, Volume= 0.561 af, Depth= 4.43"

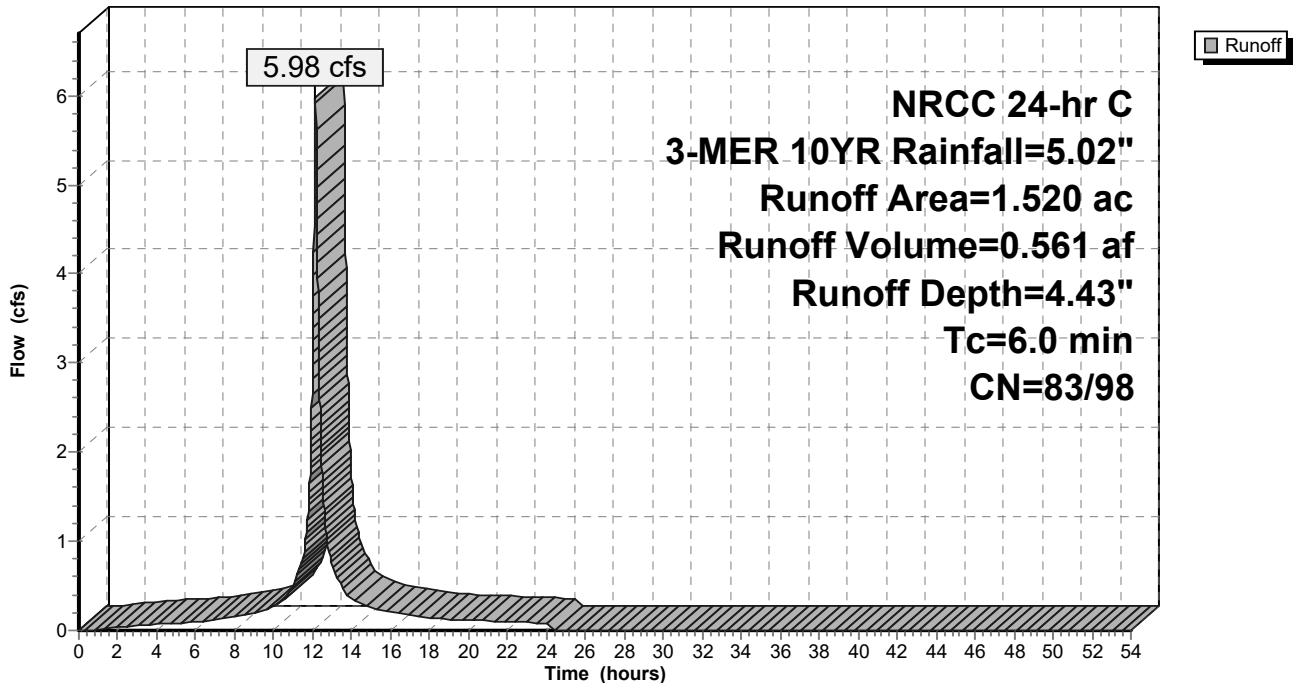
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 3-MER 10YR Rainfall=5.02"

Area (ac)	CN	Description
* 0.230	98	Roofs
* 0.050	98	Unconnected pavement
* 0.950	98	Paved parking
0.290	80	>75% Grass cover, Good, HSG D
1.520	95	Weighted Average
0.340	83	22.37% Pervious Area
1.180	98	77.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

### Subcatchment EB-4: EB-4

Hydrograph



**Summary for Subcatchment EB-5: EB-5**

Runoff = 0.79 cfs @ 12.14 hrs, Volume= 0.076 af, Depth= 4.78"

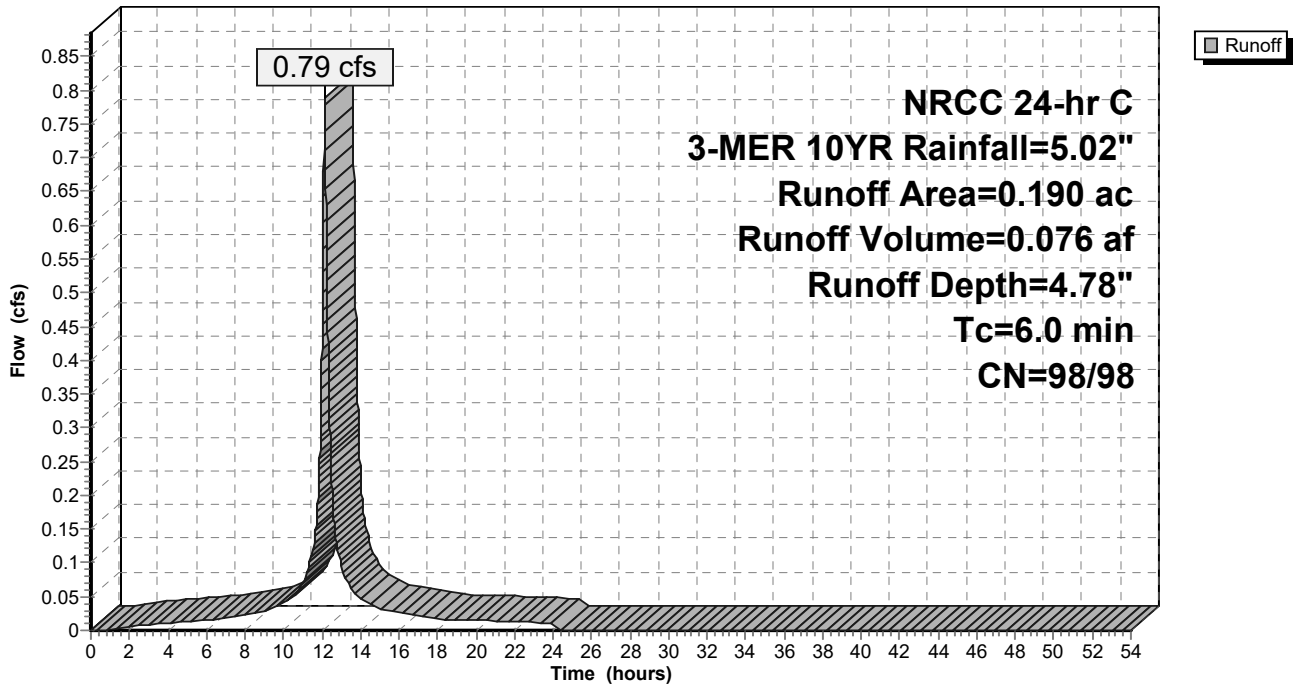
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 3-MER 10YR Rainfall=5.02"

Area (ac)	CN	Description
* 0.010	98	Unconnected pavement
* 0.180	98	Paved parking
0.190	98	Weighted Average
0.010	98	5.26% Pervious Area
0.180	98	94.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EB-5: EB-5**

Hydrograph



**Summary for Subcatchment EB-6: EB-6**

Runoff = 1.58 cfs @ 12.14 hrs, Volume= 0.151 af, Depth= 4.78"

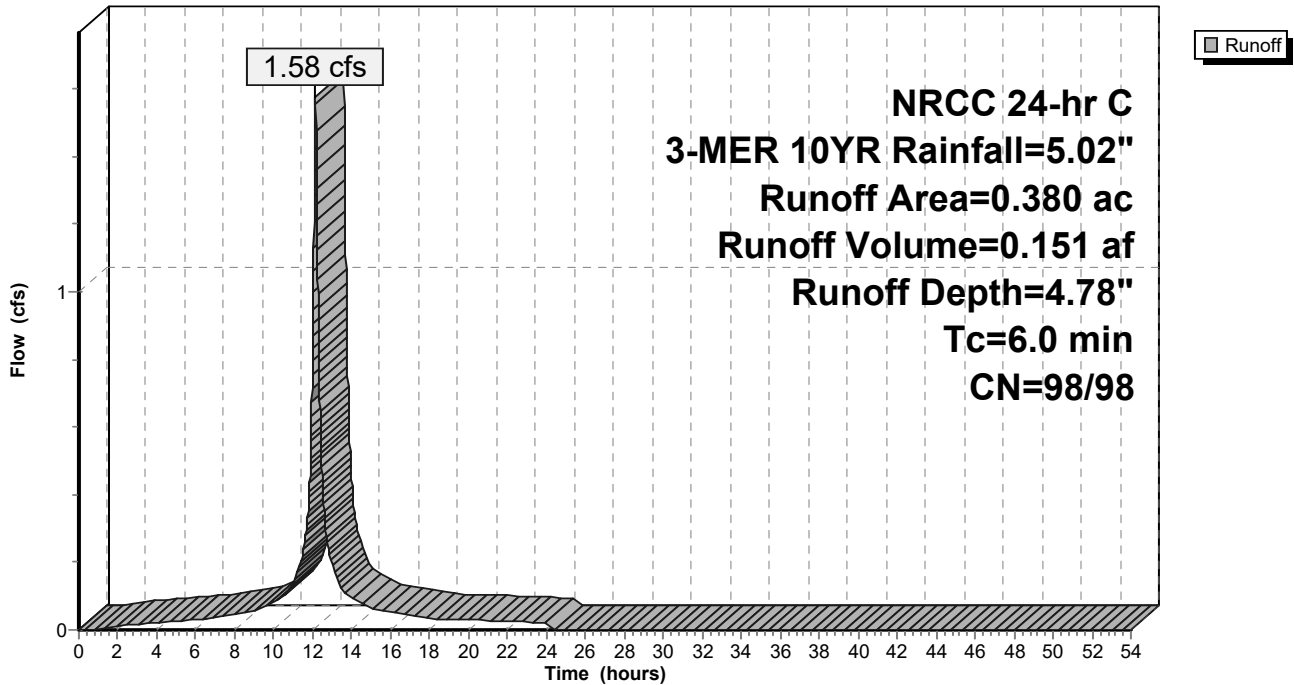
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 3-MER 10YR Rainfall=5.02"

Area (ac)	CN	Description
* 0.251	98	Roofs
* 0.027	98	Unconnected pavement
* 0.102	98	Paved parking
0.380	98	Weighted Average
0.027	98	7.11% Pervious Area
0.353	98	92.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EB-6: EB-6**

Hydrograph



**Summary for Subcatchment EB-7: EB-7**

Runoff = 0.50 cfs @ 12.14 hrs, Volume= 0.045 af, Depth= 3.86"

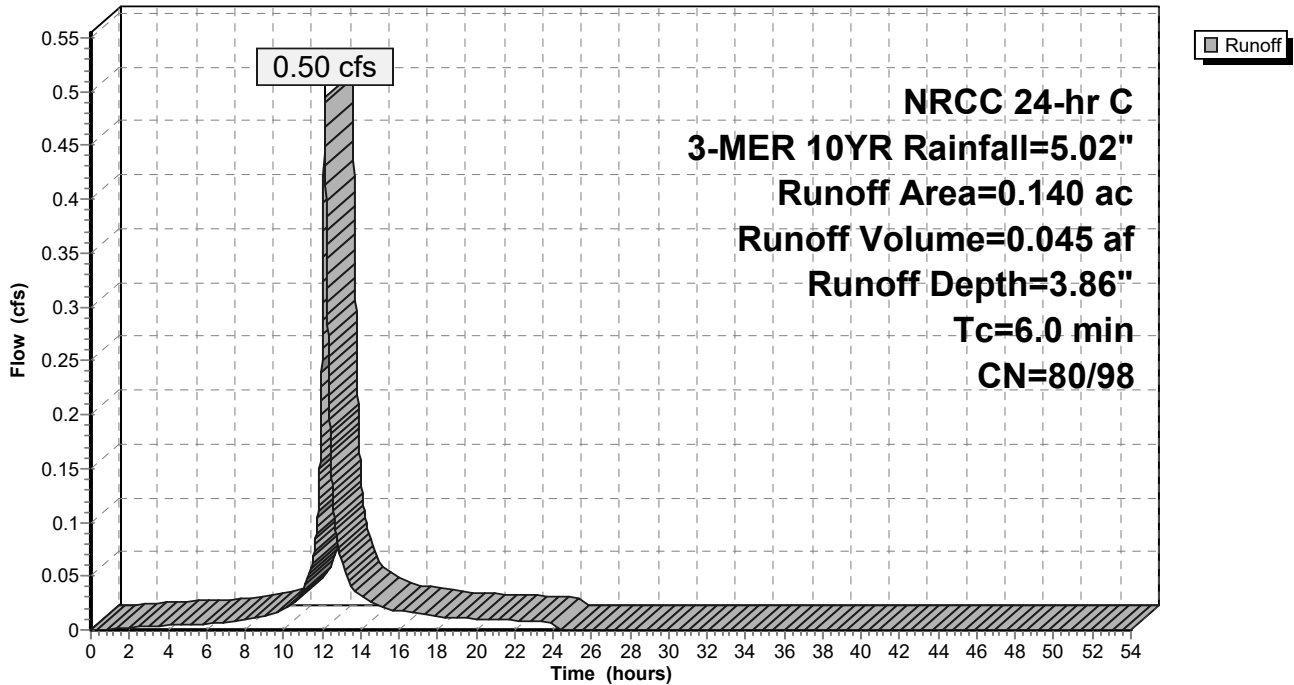
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 3-MER 10YR Rainfall=5.02"

Area (ac)	CN	Description
0.031	98	Paved parking, HSG D
0.040	98	Roofs, HSG D
0.069	80	>75% Grass cover, Good, HSG D
0.140	89	Weighted Average
0.069	80	49.29% Pervious Area
0.071	98	50.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EB-7: EB-7**

Hydrograph



**Summary for Subcatchment EB-8-ROW: EB-8-ROW**

Runoff = 0.62 cfs @ 12.14 hrs, Volume= 0.060 af, Depth= 4.78"

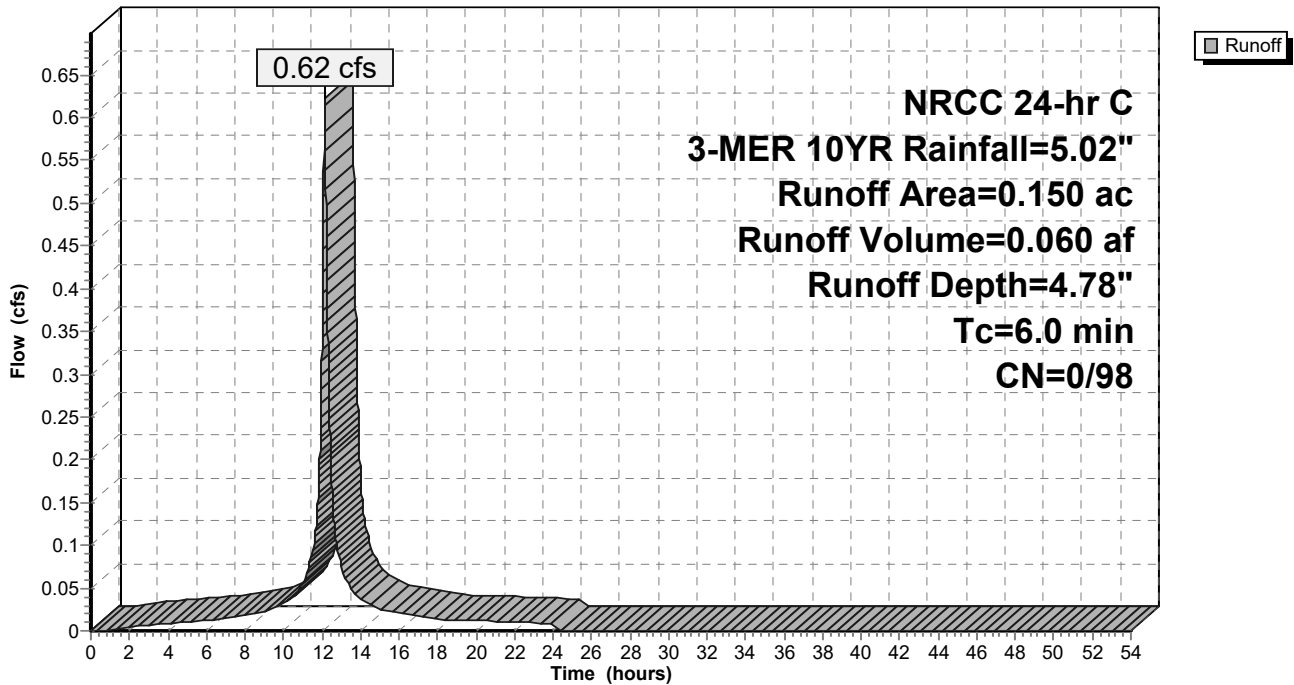
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 3-MER 10YR Rainfall=5.02"

Area (ac)	CN	Description
0.150	98	Paved parking, HSG D
0.150	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EB-8-ROW: EB-8-ROW**

Hydrograph



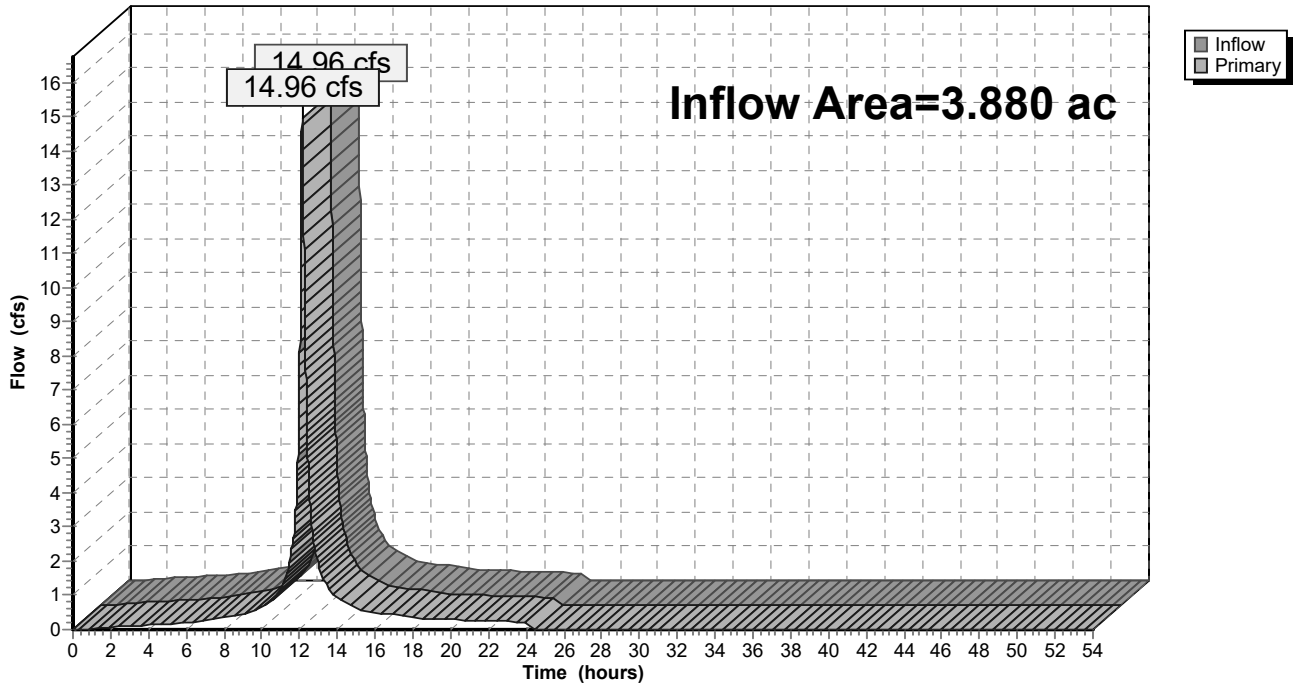
### Summary for Link POA-B1: POA-B1(ROCKY BROOK CULVERT)

Inflow Area = 3.880 ac, 59.90% Impervious, Inflow Depth = 4.26" for 3-MER 10YR event  
Inflow = 14.96 cfs @ 12.14 hrs, Volume= 1.378 af  
Primary = 14.96 cfs @ 12.14 hrs, Volume= 1.378 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-B1: POA-B1(ROCKY BROOK CULVERT)

Hydrograph

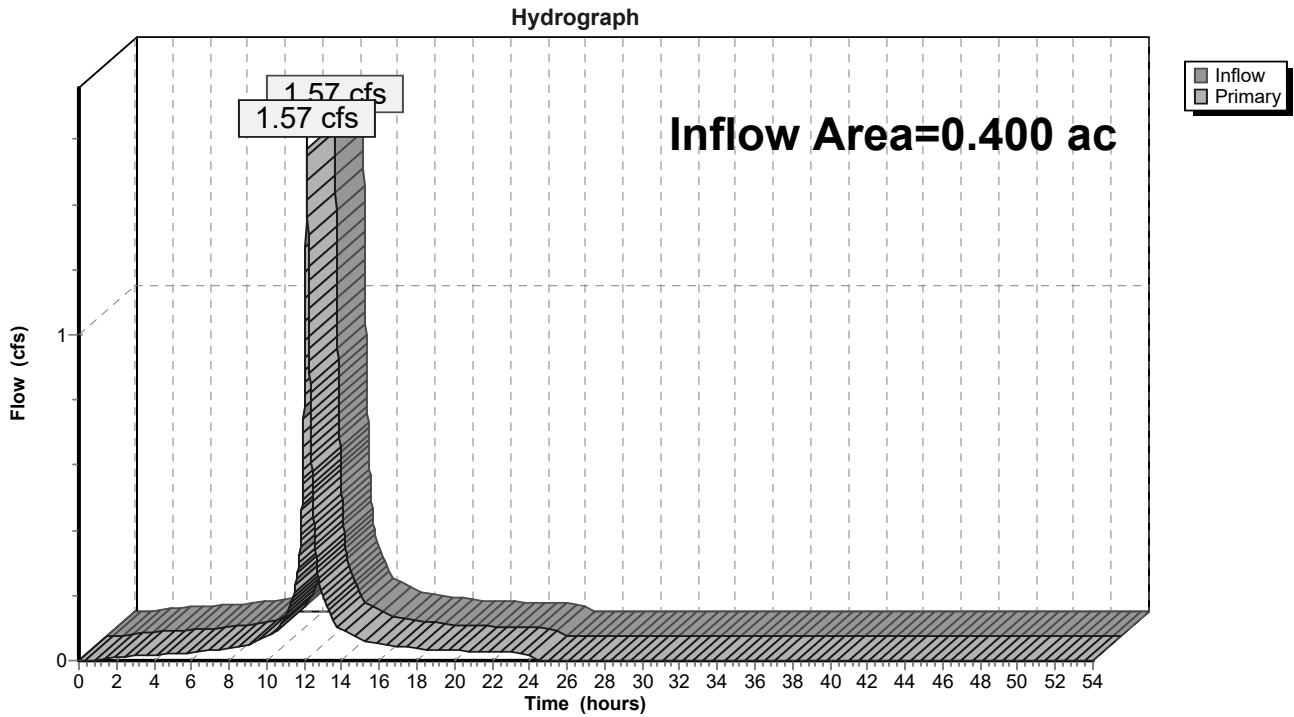


### Summary for Link POA-B2: POA-B2 (BANK ST)

Inflow Area = 0.400 ac, 75.00% Impervious, Inflow Depth = 4.41" for 3-MER 10YR event  
Inflow = 1.57 cfs @ 12.14 hrs, Volume= 0.147 af  
Primary = 1.57 cfs @ 12.14 hrs, Volume= 0.147 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-B2: POA-B2 (BANK ST)



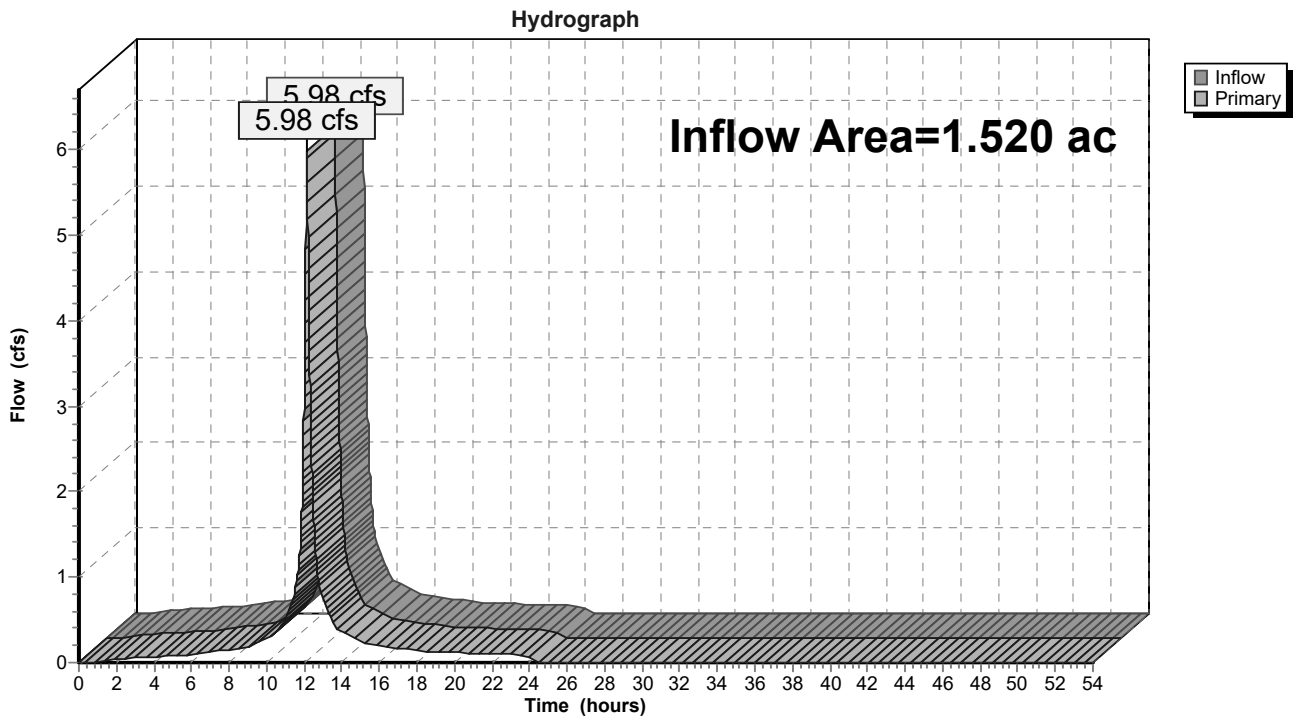


### Summary for Link POA-BIA: POA-B1A (ROCKY BROOK 24" HW)

Inflow Area = 1.520 ac, 77.63% Impervious, Inflow Depth = 4.43" for 3-MER 10YR event  
Inflow = 5.98 cfs @ 12.14 hrs, Volume= 0.561 af  
Primary = 5.98 cfs @ 12.14 hrs, Volume= 0.561 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-BIA: POA-B1A (ROCKY BROOK 24" HW)



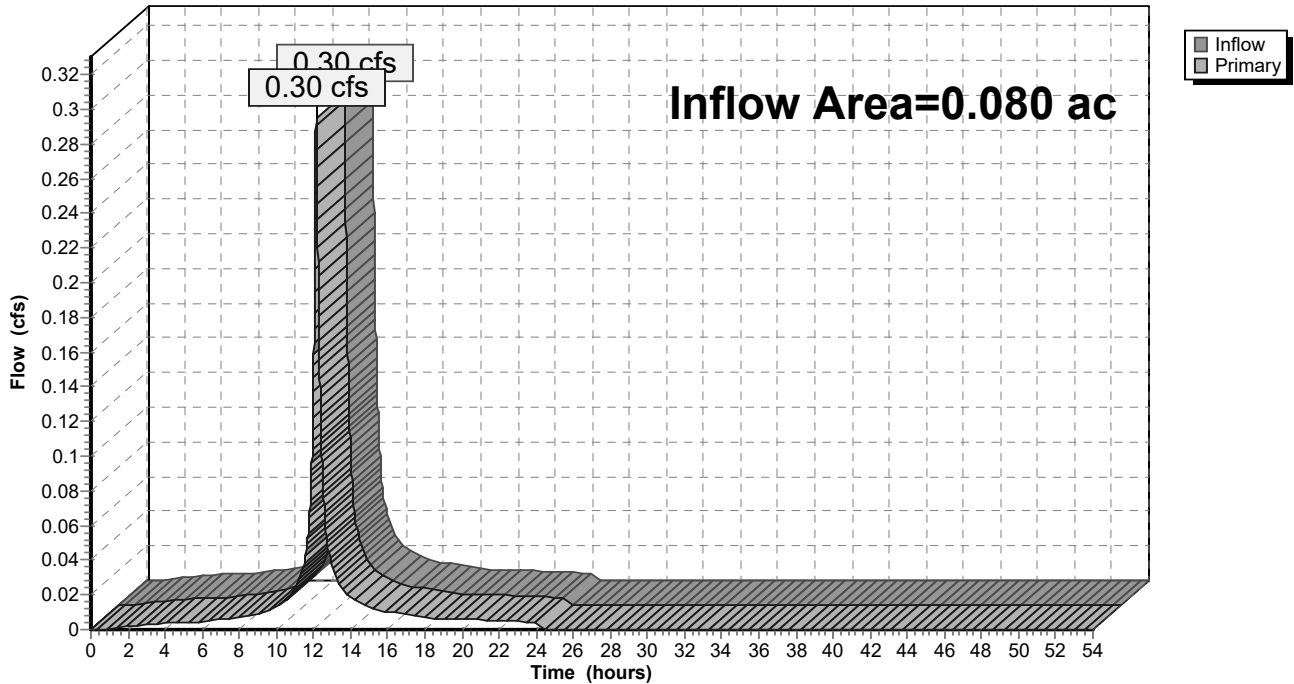
### Summary for Link POA-E3: POA-E3 (12" RCP)

Inflow Area = 0.080 ac, 75.00% Impervious, Inflow Depth = 4.16" for 3-MER 10YR event  
Inflow = 0.30 cfs @ 12.14 hrs, Volume= 0.028 af  
Primary = 0.30 cfs @ 12.14 hrs, Volume= 0.028 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-E3: POA-E3 (12" RCP)

Hydrograph



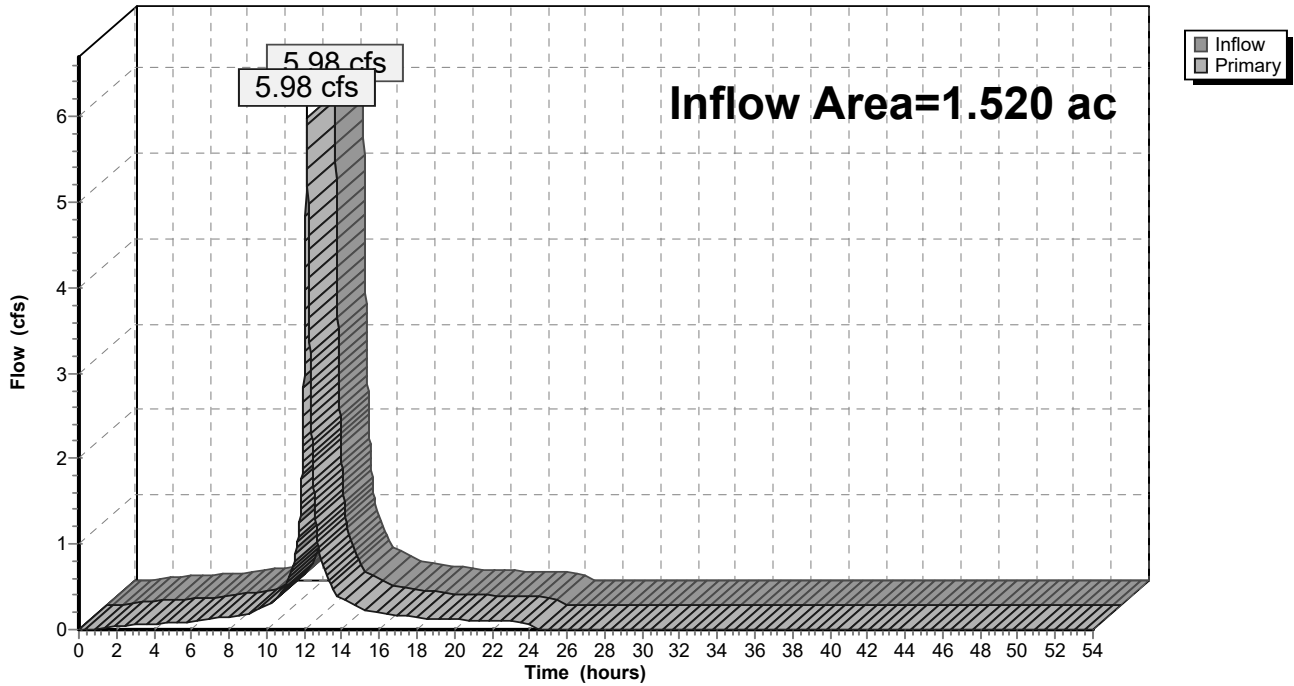
### Summary for Link POA-E4: POA-E4 (24" RCP)

Inflow Area = 1.520 ac, 77.63% Impervious, Inflow Depth = 4.43" for 3-MER 10YR event  
Inflow = 5.98 cfs @ 12.14 hrs, Volume= 0.561 af  
Primary = 5.98 cfs @ 12.14 hrs, Volume= 0.561 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-E4: POA-E4 (24" RCP)

Hydrograph



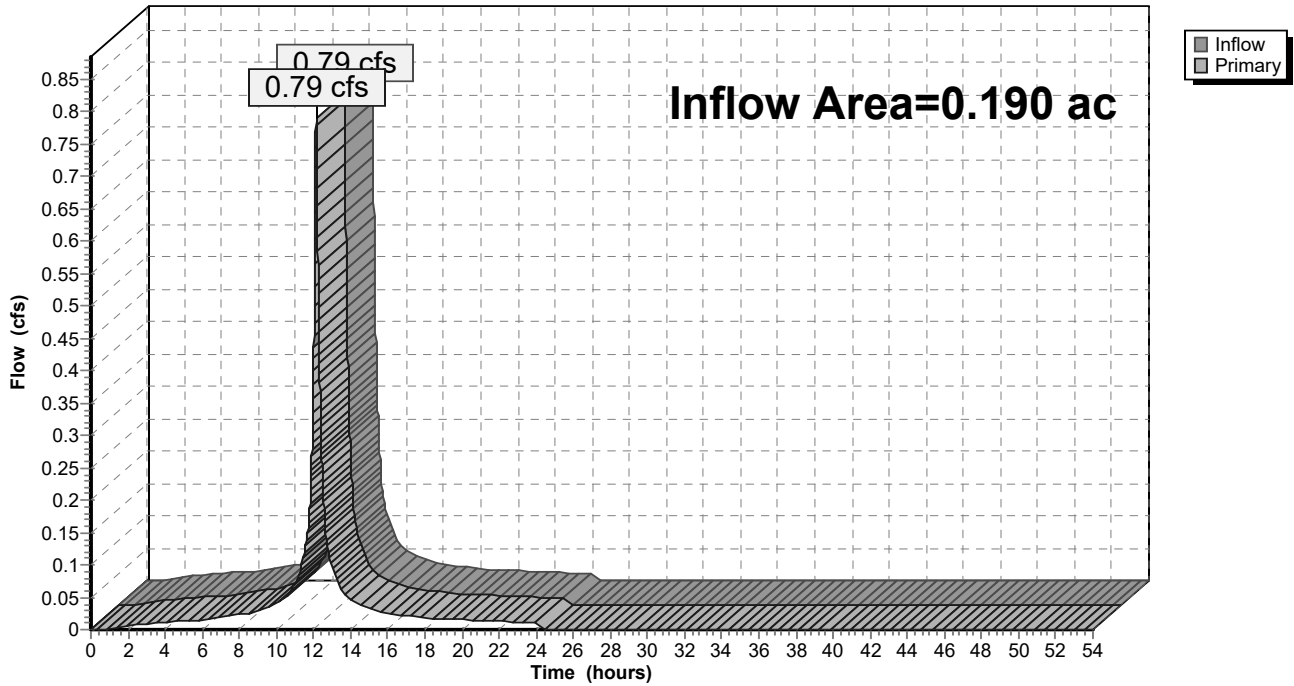
### Summary for Link POA-E5: POA-E5 (10" TER)

Inflow Area = 0.190 ac, 94.74% Impervious, Inflow Depth = 4.78" for 3-MER 10YR event  
Inflow = 0.79 cfs @ 12.14 hrs, Volume= 0.076 af  
Primary = 0.79 cfs @ 12.14 hrs, Volume= 0.076 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-E5: POA-E5 (10" TER)

Hydrograph

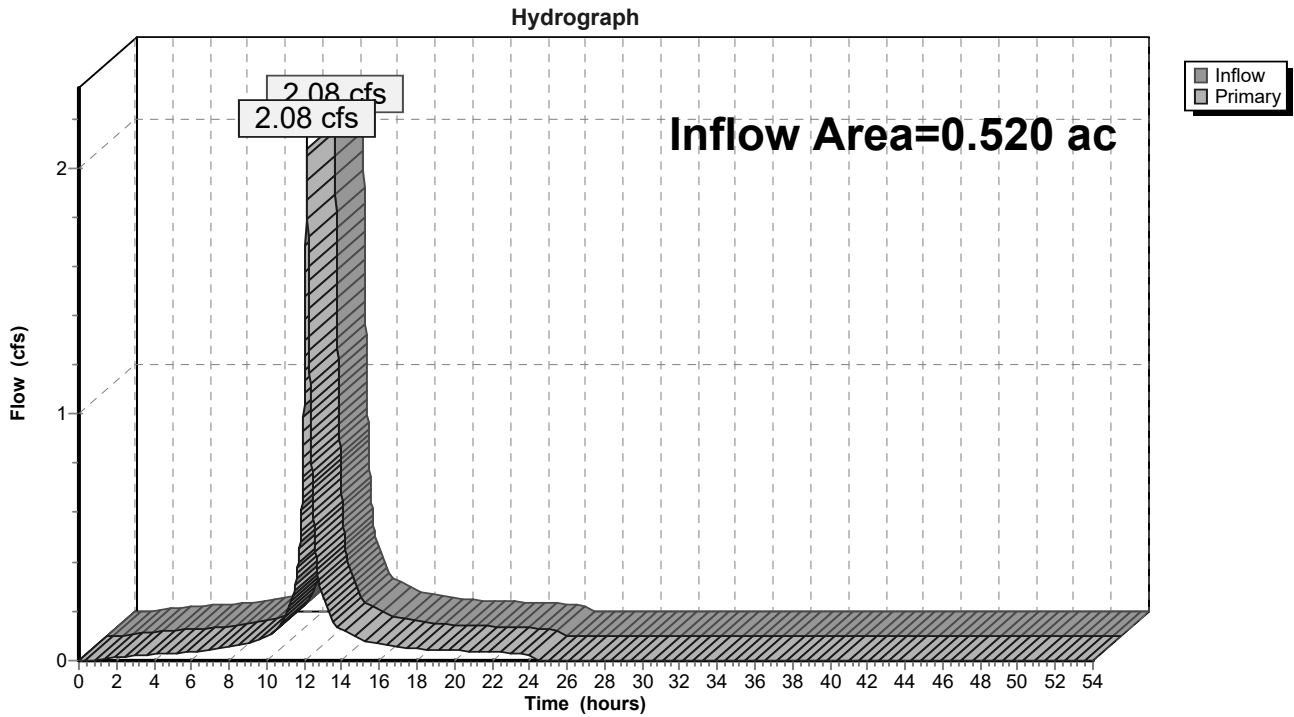


### Summary for Link POA-E6: POA-E6 (8" PVC)

Inflow Area = 0.520 ac, 81.54% Impervious, Inflow Depth = 4.53" for 3-MER 10YR event  
Inflow = 2.08 cfs @ 12.14 hrs, Volume= 0.197 af  
Primary = 2.08 cfs @ 12.14 hrs, Volume= 0.197 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-E6: POA-E6 (8" PVC)



Time span=0.00-54.00 hrs, dt=0.01 hrs, 5401 points  
 Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious  
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

<b>Subcatchment EB-1: EB-1</b>	Runoff Area=0.250 ac 60.00% Impervious Runoff Depth=5.33" Tc=6.0 min CN=84/98 Runoff=1.20 cfs 0.111 af
<b>Subcatchment EB-2: EB-2</b>	Runoff Area=0.080 ac 75.00% Impervious Runoff Depth=5.29" Tc=6.0 min CN=73/98 Runoff=0.37 cfs 0.035 af
<b>Subcatchment EB-3: EB-3</b>	Runoff Area=1.570 ac 30.57% Impervious Runoff Depth=5.09" Tc=6.0 min CN=87/98 Runoff=7.42 cfs 0.666 af
<b>Subcatchment EB-4: EB-4</b>	Runoff Area=1.520 ac 77.63% Impervious Runoff Depth=5.58" Tc=6.0 min CN=83/98 Runoff=7.50 cfs 0.707 af
<b>Subcatchment EB-5: EB-5</b>	Runoff Area=0.190 ac 94.74% Impervious Runoff Depth=5.96" Tc=6.0 min CN=98/98 Runoff=0.98 cfs 0.094 af
<b>Subcatchment EB-6: EB-6</b>	Runoff Area=0.380 ac 92.89% Impervious Runoff Depth=5.96" Tc=6.0 min CN=98/98 Runoff=1.95 cfs 0.189 af
<b>Subcatchment EB-7: EB-7</b>	Runoff Area=0.140 ac 50.71% Impervious Runoff Depth=4.98" Tc=6.0 min CN=80/98 Runoff=0.64 cfs 0.058 af
<b>Subcatchment EB-8-ROW: EB-8-ROW</b>	Runoff Area=0.150 ac 100.00% Impervious Runoff Depth=5.96" Tc=6.0 min CN=0/98 Runoff=0.77 cfs 0.075 af
<b>Link POA-B1: POA-B1(ROCKY BROOK CULVERT)</b>	Inflow=18.86 cfs 1.750 af Primary=18.86 cfs 1.750 af
<b>Link POA-B2: POA-B2 (BANK ST)</b>	Inflow=1.97 cfs 0.186 af Primary=1.97 cfs 0.186 af
<b>Link POA-BIA: POA-B1A (ROCKY BROOK 24" HW)</b>	Inflow=7.50 cfs 0.707 af Primary=7.50 cfs 0.707 af
<b>Link POA-E3: POA-E3 (12" RCP)</b>	Inflow=0.37 cfs 0.035 af Primary=0.37 cfs 0.035 af
<b>Link POA-E4: POA-E4 (24" RCP)</b>	Inflow=7.50 cfs 0.707 af Primary=7.50 cfs 0.707 af
<b>Link POA-E5: POA-E5 (10" TER)</b>	Inflow=0.98 cfs 0.094 af Primary=0.98 cfs 0.094 af
<b>Link POA-E6: POA-E6 (8" PVC)</b>	Inflow=2.59 cfs 0.247 af Primary=2.59 cfs 0.247 af

**Total Runoff Area = 4.280 ac Runoff Volume = 1.936 af Average Runoff Depth = 5.43"**  
**38.69% Pervious = 1.656 ac 61.31% Impervious = 2.624 ac**

**Summary for Subcatchment EB-1: EB-1**

Runoff = 1.20 cfs @ 12.14 hrs, Volume= 0.111 af, Depth= 5.33"

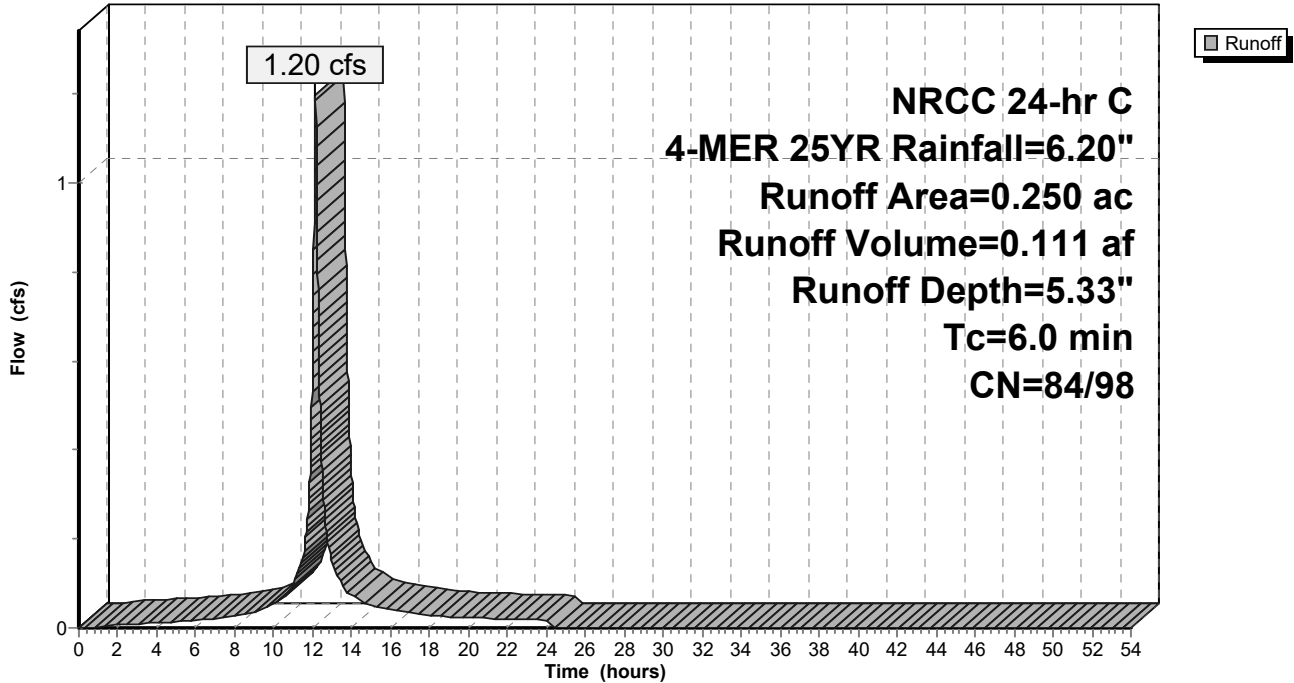
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 4-MER 25YR Rainfall=6.20"

Area (ac)	CN	Description
0.150	98	Roofs, HSG C
0.020	98	Unconnected pavement, HSG D
0.080	80	>75% Grass cover, Good, HSG D
0.250	92	Weighted Average
0.100	84	40.00% Pervious Area
0.150	98	60.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EB-1: EB-1**

Hydrograph



**Summary for Subcatchment EB-2: EB-2**

Runoff = 0.37 cfs @ 12.14 hrs, Volume= 0.035 af, Depth= 5.29"

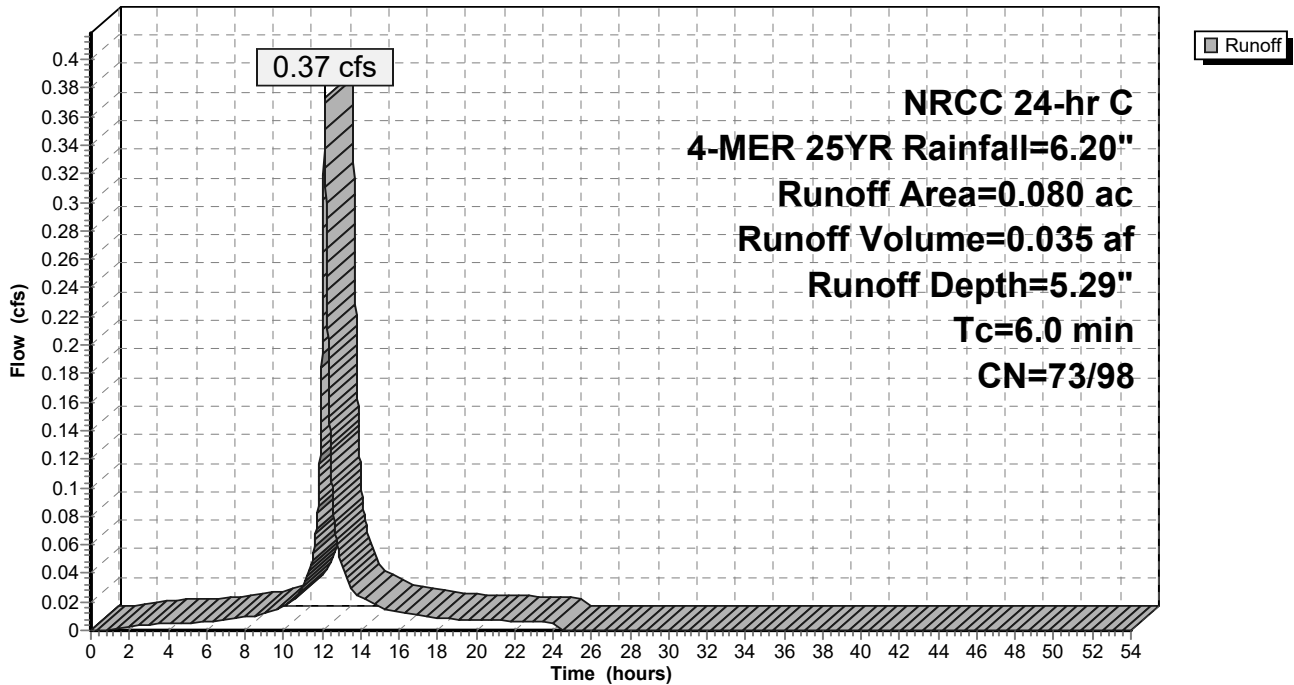
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 4-MER 25YR Rainfall=6.20"

Area (ac)	CN	Description
0.060	98	Roofs, HSG D
0.020	73	Brush, Good, HSG D
0.080	92	Weighted Average
0.020	73	25.00% Pervious Area
0.060	98	75.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EB-2: EB-2**

Hydrograph





**Summary for Subcatchment EB-3: EB-3**

Runoff = 7.42 cfs @ 12.14 hrs, Volume= 0.666 af, Depth= 5.09"

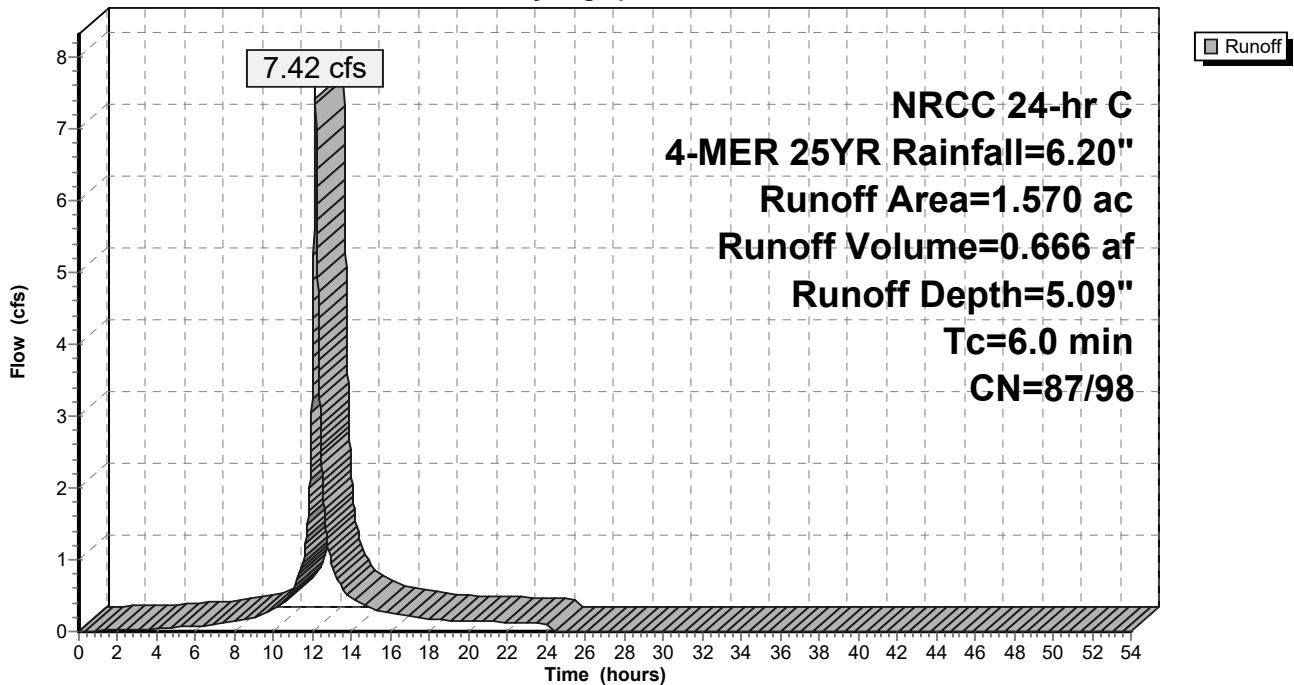
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 4-MER 25YR Rainfall=6.20"

Area (ac)	CN	Description
0.300	98	Roofs, HSG C
0.600	91	Gravel roads, HSG D
0.160	98	Paved parking, HSG D
0.350	80	>75% Grass cover, Good, HSG D
* 0.140	86	Wetlands
0.020	98	Roofs, HSG C
<hr/>		
1.570	90	Weighted Average
1.090	87	69.43% Pervious Area
0.480	98	30.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EB-3: EB-3**

Hydrograph



**Summary for Subcatchment EB-4: EB-4**

Runoff = 7.50 cfs @ 12.14 hrs, Volume= 0.707 af, Depth= 5.58"

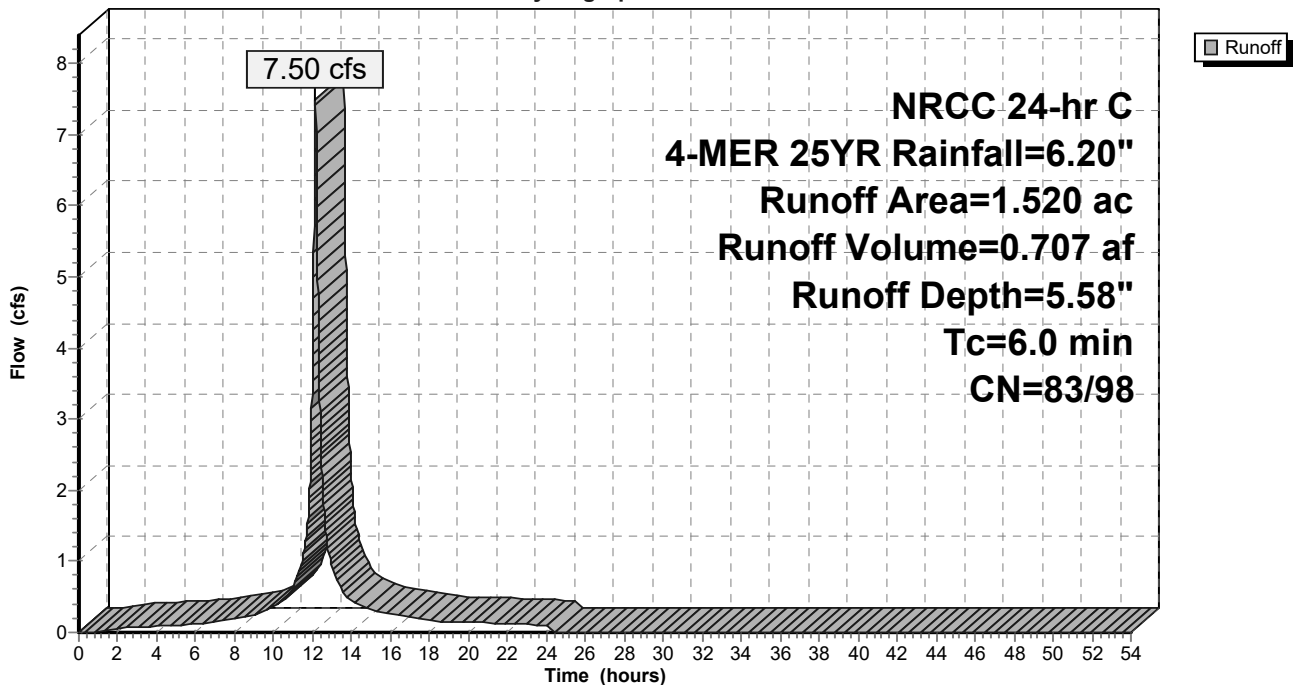
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 4-MER 25YR Rainfall=6.20"

Area (ac)	CN	Description
* 0.230	98	Roofs
* 0.050	98	Unconnected pavement
* 0.950	98	Paved parking
0.290	80	>75% Grass cover, Good, HSG D
1.520	95	Weighted Average
0.340	83	22.37% Pervious Area
1.180	98	77.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EB-4: EB-4**

Hydrograph



### Summary for Subcatchment EB-5: EB-5

Runoff = 0.98 cfs @ 12.14 hrs, Volume= 0.094 af, Depth= 5.96"

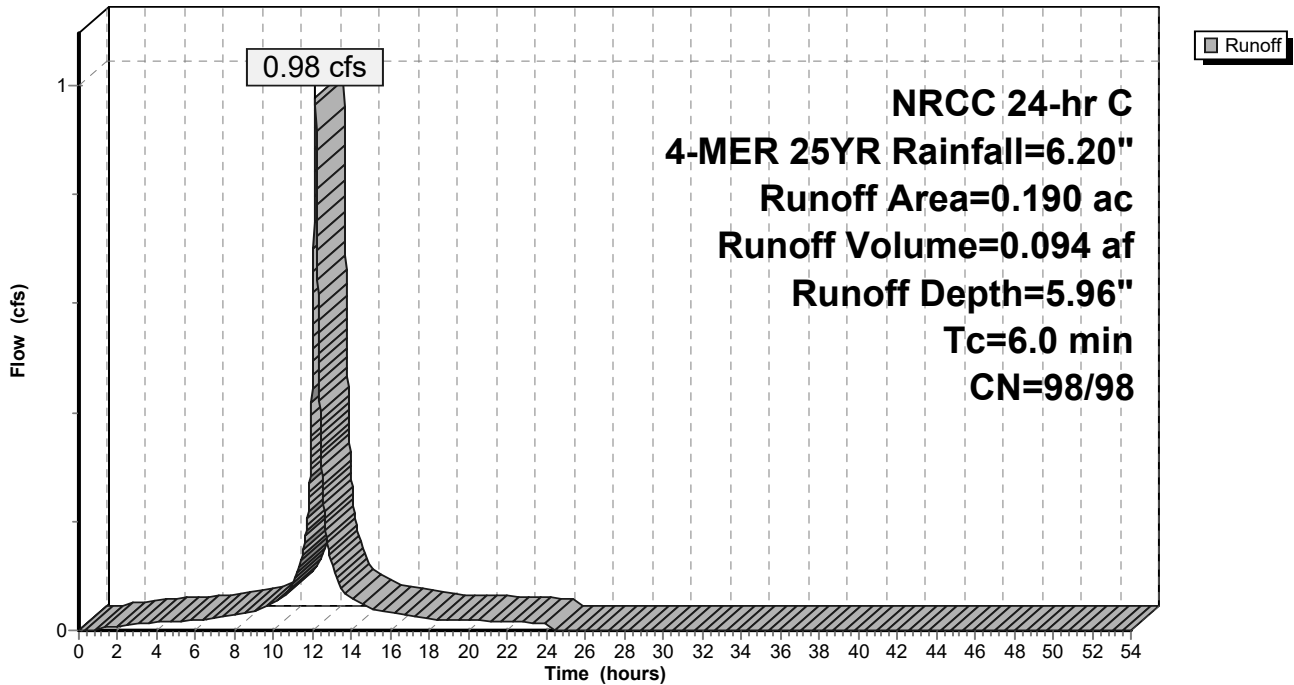
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 4-MER 25YR Rainfall=6.20"

Area (ac)	CN	Description
* 0.010	98	Unconnected pavement
* 0.180	98	Paved parking
0.190	98	Weighted Average
0.010	98	5.26% Pervious Area
0.180	98	94.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

### Subcatchment EB-5: EB-5

Hydrograph



**Summary for Subcatchment EB-6: EB-6**

Runoff = 1.95 cfs @ 12.14 hrs, Volume= 0.189 af, Depth= 5.96"

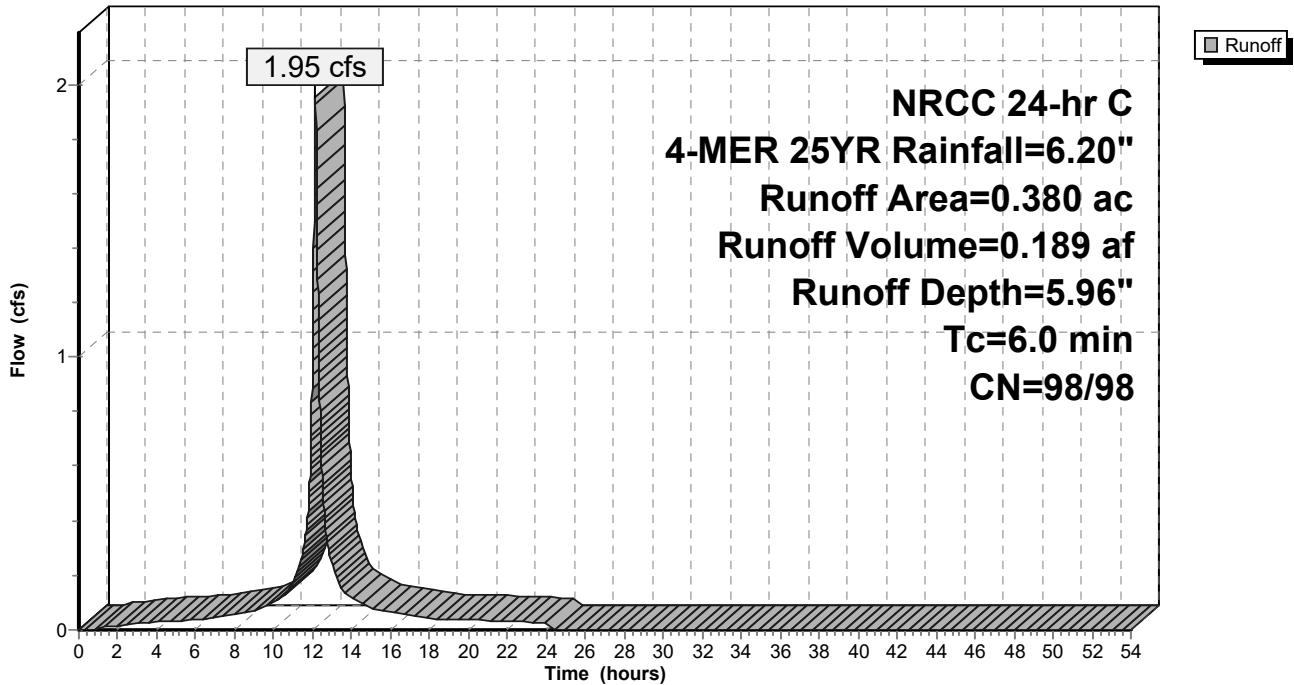
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 4-MER 25YR Rainfall=6.20"

Area (ac)	CN	Description
* 0.251	98	Roofs
* 0.027	98	Unconnected pavement
* 0.102	98	Paved parking
0.380	98	Weighted Average
0.027	98	7.11% Pervious Area
0.353	98	92.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EB-6: EB-6**

Hydrograph



**Summary for Subcatchment EB-7: EB-7**

Runoff = 0.64 cfs @ 12.14 hrs, Volume= 0.058 af, Depth= 4.98"

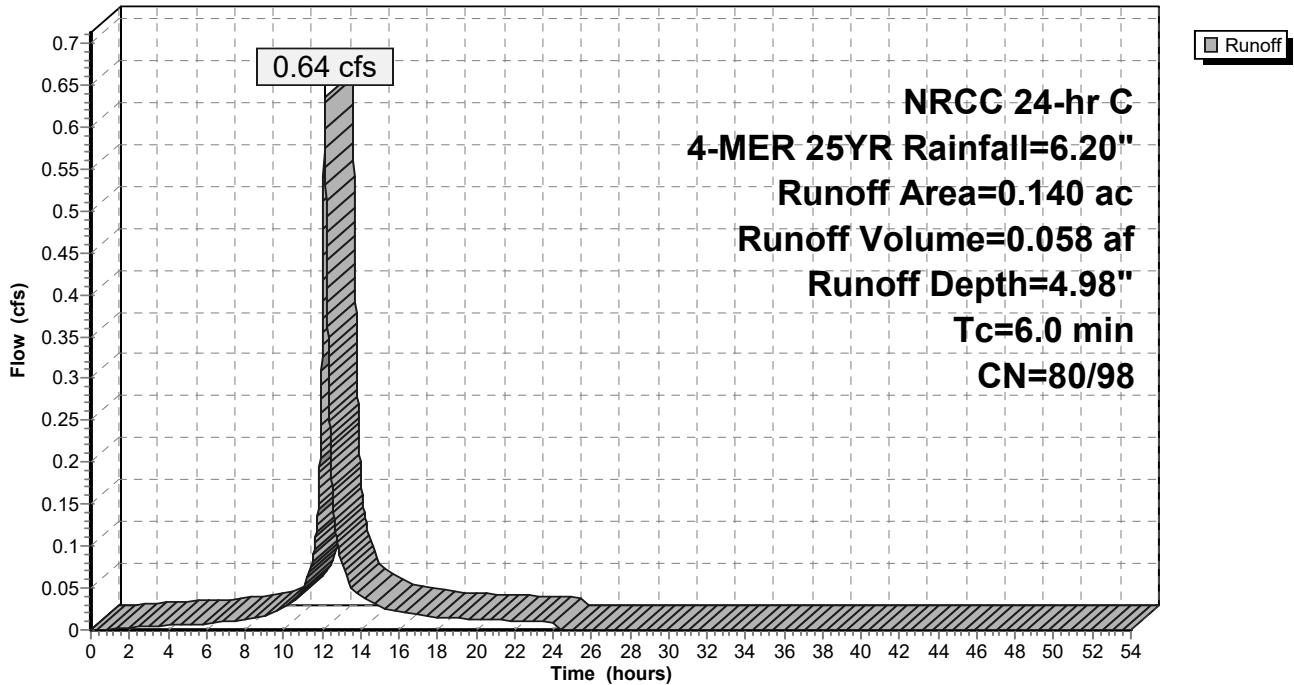
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 4-MER 25YR Rainfall=6.20"

Area (ac)	CN	Description
0.031	98	Paved parking, HSG D
0.040	98	Roofs, HSG D
0.069	80	>75% Grass cover, Good, HSG D
0.140	89	Weighted Average
0.069	80	49.29% Pervious Area
0.071	98	50.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EB-7: EB-7**

Hydrograph



**Summary for Subcatchment EB-8-ROW: EB-8-ROW**

Runoff = 0.77 cfs @ 12.14 hrs, Volume= 0.075 af, Depth= 5.96"

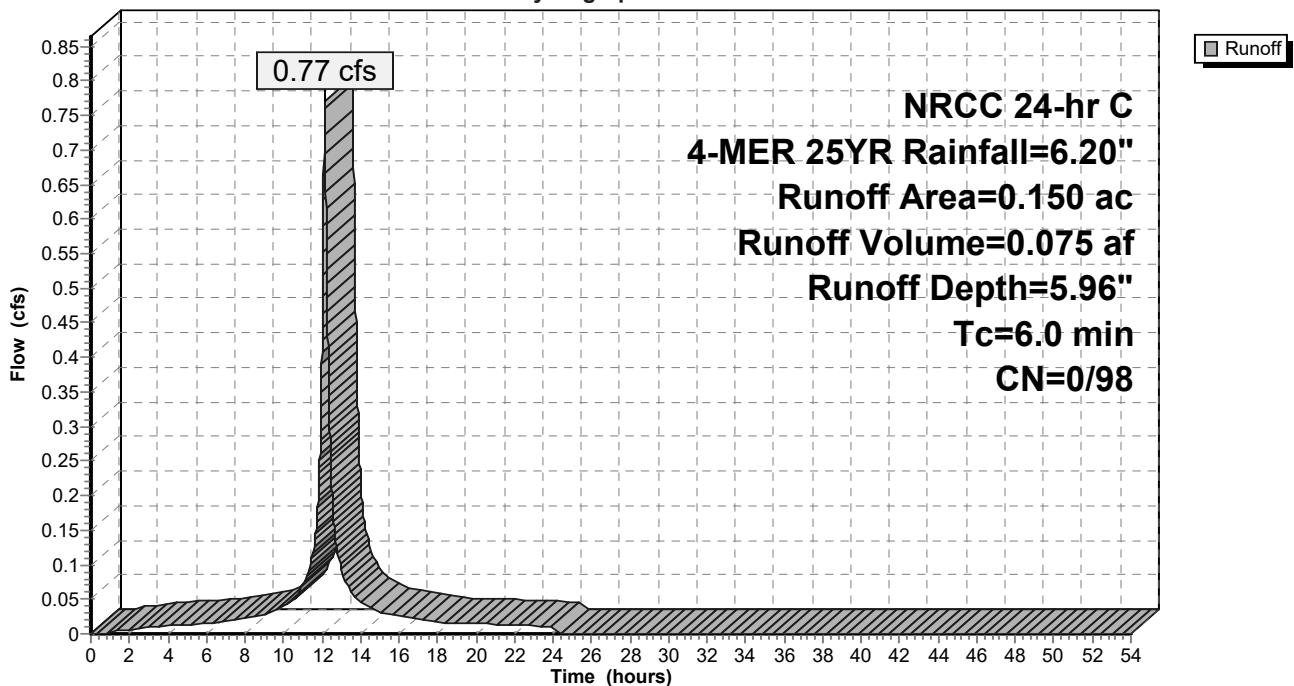
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 4-MER 25YR Rainfall=6.20"

Area (ac)	CN	Description
0.150	98	Paved parking, HSG D
0.150	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EB-8-ROW: EB-8-ROW**

Hydrograph



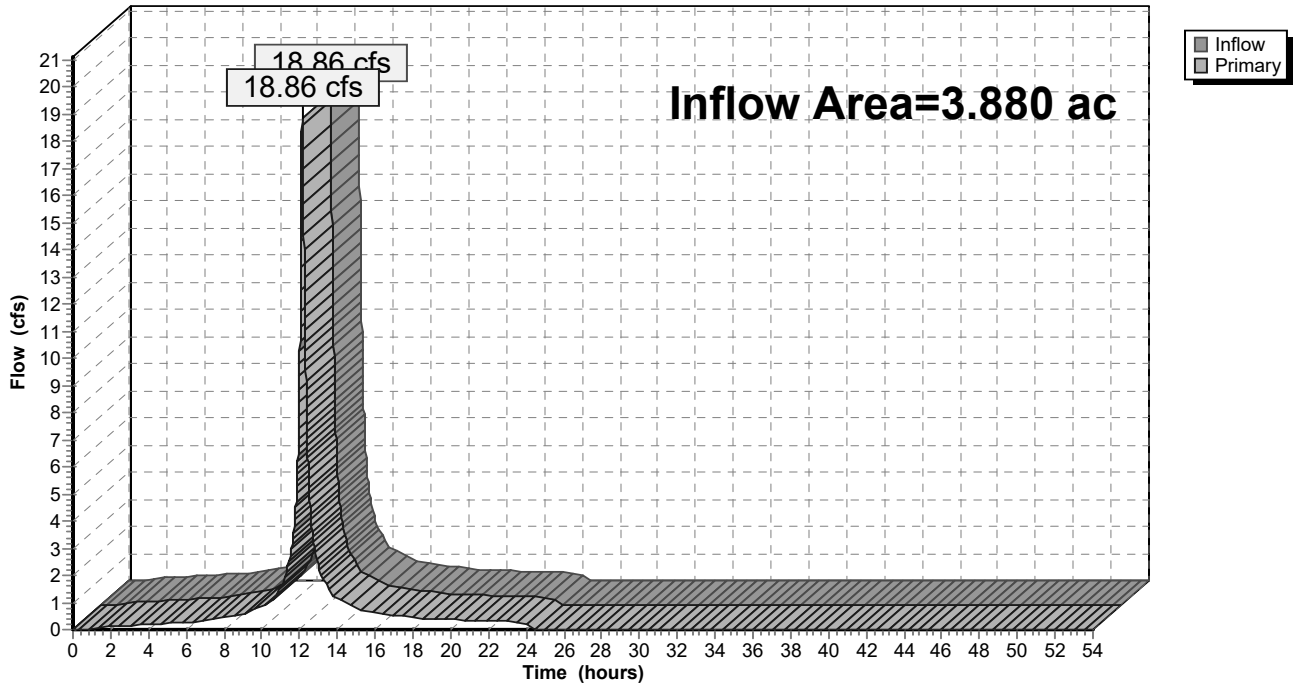
### Summary for Link POA-B1: POA-B1(ROCKY BROOK CULVERT)

Inflow Area = 3.880 ac, 59.90% Impervious, Inflow Depth = 5.41" for 4-MER 25YR event  
Inflow = 18.86 cfs @ 12.14 hrs, Volume= 1.750 af  
Primary = 18.86 cfs @ 12.14 hrs, Volume= 1.750 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-B1: POA-B1(ROCKY BROOK CULVERT)

Hydrograph

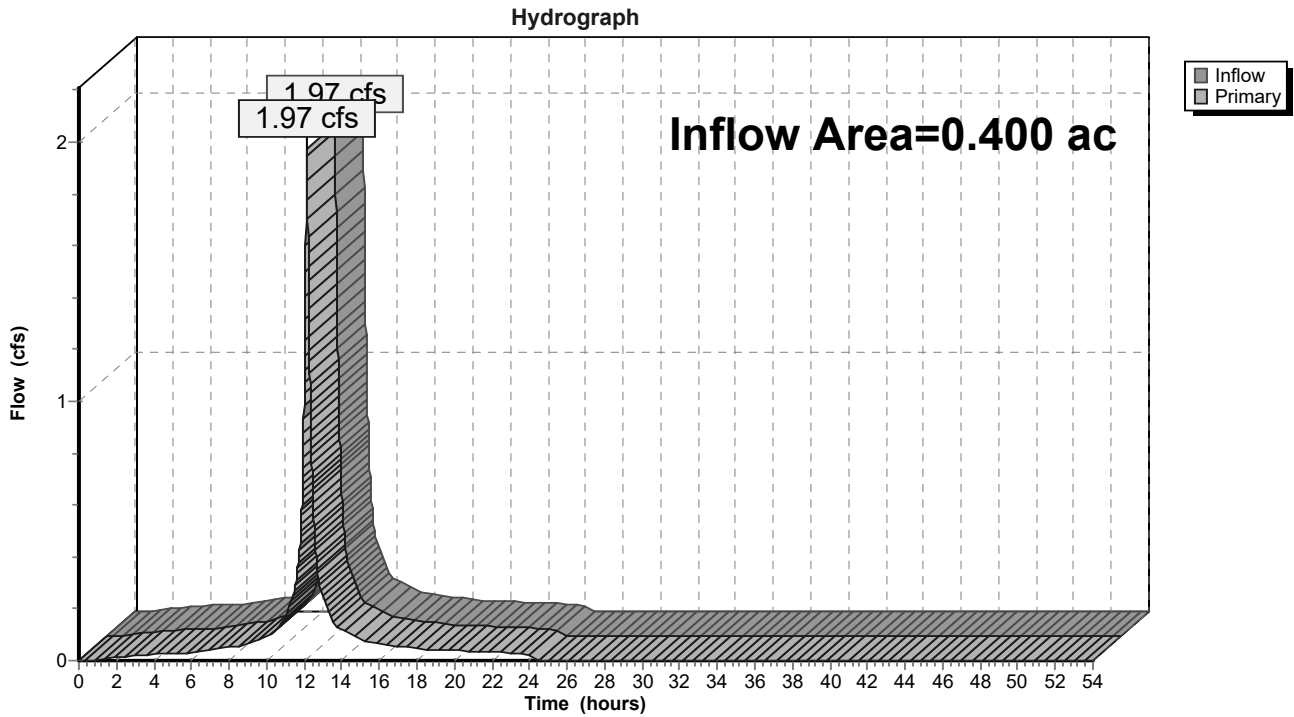


### Summary for Link POA-B2: POA-B2 (BANK ST)

Inflow Area = 0.400 ac, 75.00% Impervious, Inflow Depth = 5.57" for 4-MER 25YR event  
Inflow = 1.97 cfs @ 12.14 hrs, Volume= 0.186 af  
Primary = 1.97 cfs @ 12.14 hrs, Volume= 0.186 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-B2: POA-B2 (BANK ST)



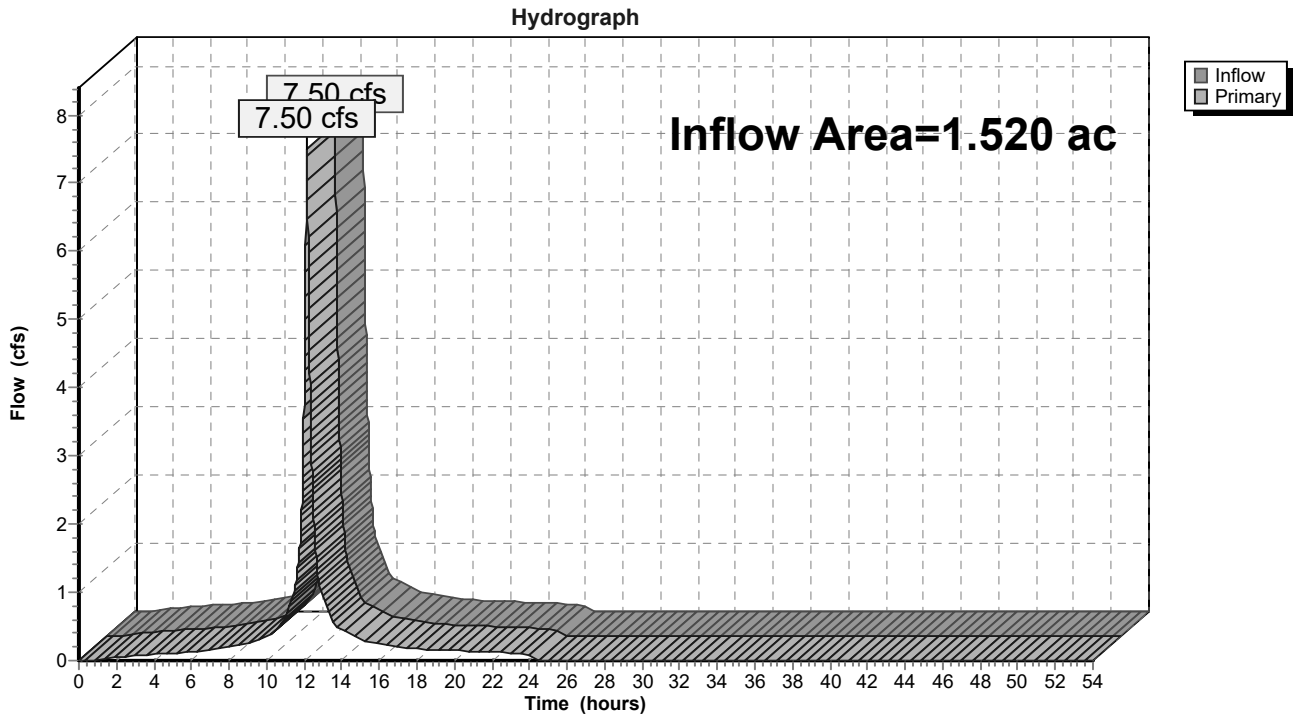


### Summary for Link POA-BIA: POA-B1A (ROCKY BROOK 24" HW)

Inflow Area = 1.520 ac, 77.63% Impervious, Inflow Depth = 5.58" for 4-MER 25YR event  
Inflow = 7.50 cfs @ 12.14 hrs, Volume= 0.707 af  
Primary = 7.50 cfs @ 12.14 hrs, Volume= 0.707 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-BIA: POA-B1A (ROCKY BROOK 24" HW)



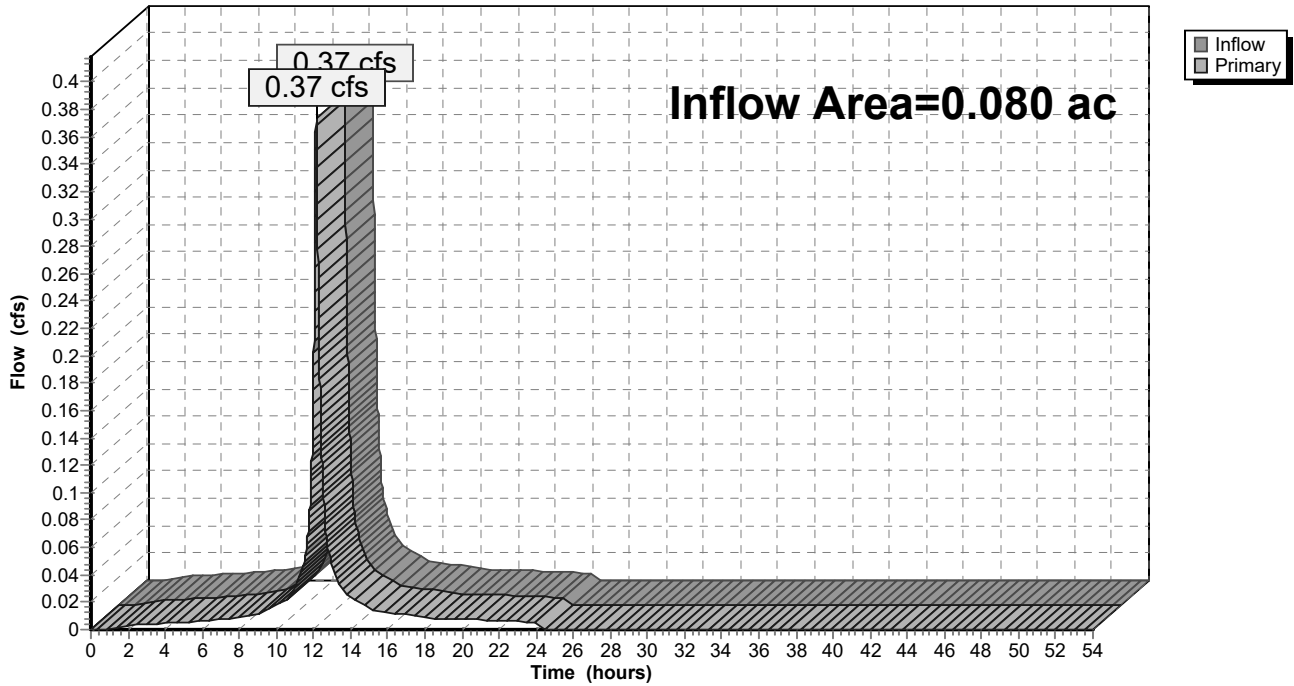
### Summary for Link POA-E3: POA-E3 (12" RCP)

Inflow Area = 0.080 ac, 75.00% Impervious, Inflow Depth = 5.29" for 4-MER 25YR event  
Inflow = 0.37 cfs @ 12.14 hrs, Volume= 0.035 af  
Primary = 0.37 cfs @ 12.14 hrs, Volume= 0.035 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-E3: POA-E3 (12" RCP)

Hydrograph

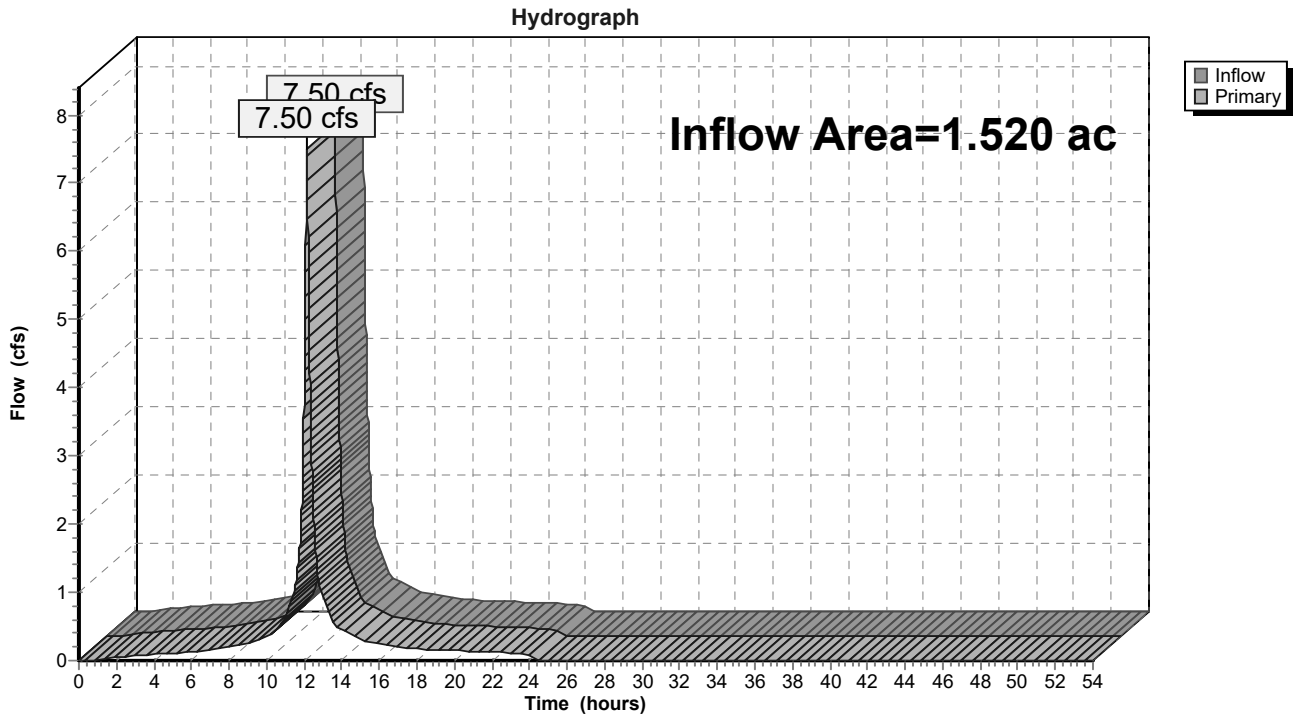


### Summary for Link POA-E4: POA-E4 (24" RCP)

Inflow Area = 1.520 ac, 77.63% Impervious, Inflow Depth = 5.58" for 4-MER 25YR event  
Inflow = 7.50 cfs @ 12.14 hrs, Volume= 0.707 af  
Primary = 7.50 cfs @ 12.14 hrs, Volume= 0.707 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-E4: POA-E4 (24" RCP)

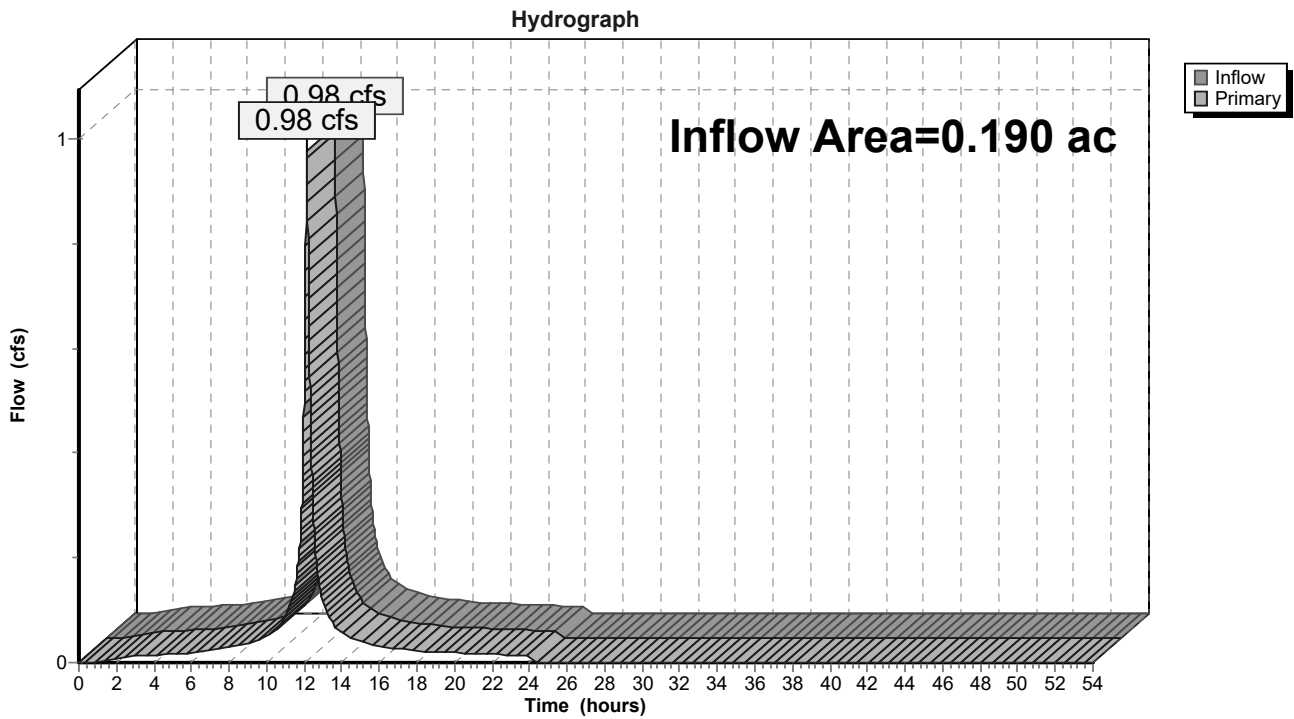


### Summary for Link POA-E5: POA-E5 (10" TER)

Inflow Area = 0.190 ac, 94.74% Impervious, Inflow Depth = 5.96" for 4-MER 25YR event  
Inflow = 0.98 cfs @ 12.14 hrs, Volume= 0.094 af  
Primary = 0.98 cfs @ 12.14 hrs, Volume= 0.094 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-E5: POA-E5 (10" TER)

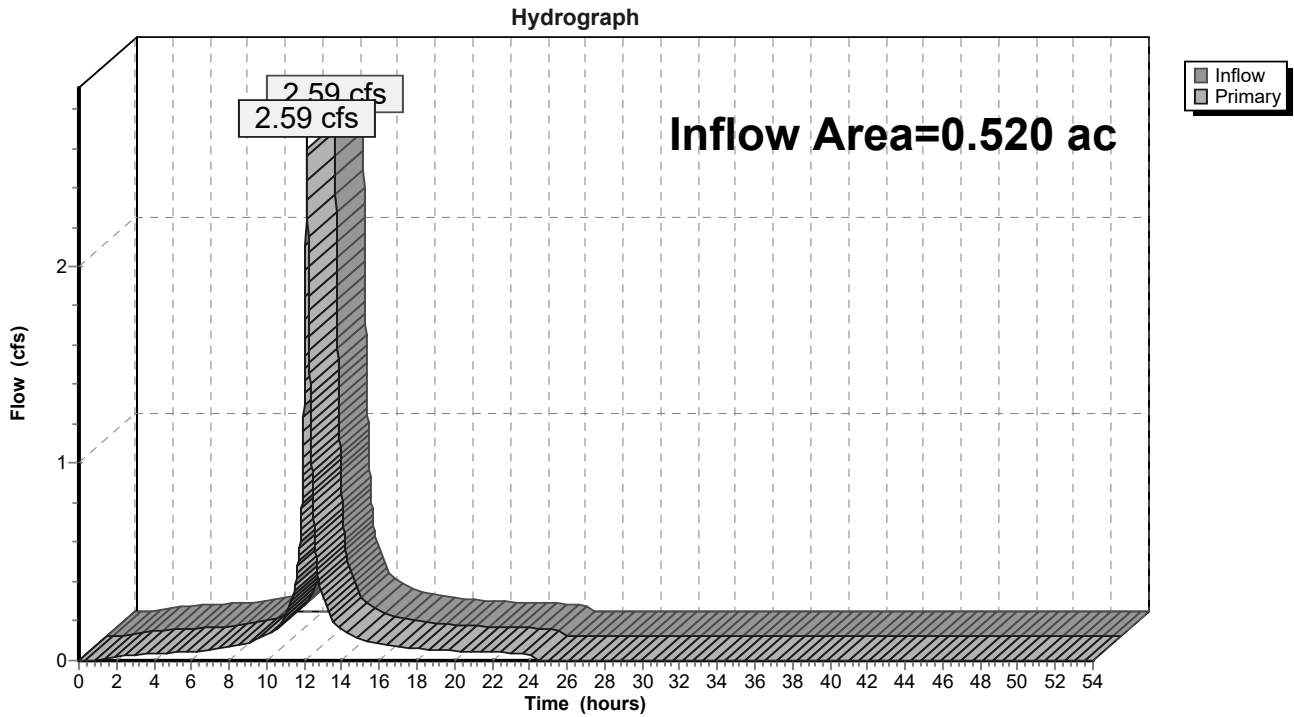


### Summary for Link POA-E6: POA-E6 (8" PVC)

Inflow Area = 0.520 ac, 81.54% Impervious, Inflow Depth = 5.70" for 4-MER 25YR event  
Inflow = 2.59 cfs @ 12.14 hrs, Volume= 0.247 af  
Primary = 2.59 cfs @ 12.14 hrs, Volume= 0.247 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-E6: POA-E6 (8" PVC)



Time span=0.00-54.00 hrs, dt=0.01 hrs, 5401 points  
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious  
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

<b>Subcatchment EB-1: EB-1</b>	Runoff Area=0.250 ac 60.00% Impervious Runoff Depth=7.44" Tc=6.0 min CN=84/98 Runoff=1.66 cfs 0.155 af
<b>Subcatchment EB-2: EB-2</b>	Runoff Area=0.080 ac 75.00% Impervious Runoff Depth=7.36" Tc=6.0 min CN=73/98 Runoff=0.52 cfs 0.049 af
<b>Subcatchment EB-3: EB-3</b>	Runoff Area=1.570 ac 30.57% Impervious Runoff Depth=7.19" Tc=6.0 min CN=87/98 Runoff=10.33 cfs 0.941 af
<b>Subcatchment EB-4: EB-4</b>	Runoff Area=1.520 ac 77.63% Impervious Runoff Depth=7.71" Tc=6.0 min CN=83/98 Runoff=10.26 cfs 0.976 af
<b>Subcatchment EB-5: EB-5</b>	Runoff Area=0.190 ac 94.74% Impervious Runoff Depth=8.11" Tc=6.0 min CN=98/98 Runoff=1.32 cfs 0.128 af
<b>Subcatchment EB-6: EB-6</b>	Runoff Area=0.380 ac 92.89% Impervious Runoff Depth=8.11" Tc=6.0 min CN=98/98 Runoff=2.64 cfs 0.257 af
<b>Subcatchment EB-7: EB-7</b>	Runoff Area=0.140 ac 50.71% Impervious Runoff Depth=7.05" Tc=6.0 min CN=80/98 Runoff=0.89 cfs 0.082 af
<b>Subcatchment EB-8-ROW: EB-8-ROW</b>	Runoff Area=0.150 ac 100.00% Impervious Runoff Depth=8.11" Tc=6.0 min CN=0/98 Runoff=1.04 cfs 0.101 af
<b>Link POA-B1: POA-B1(ROCKY BROOK CULVERT)</b>	Inflow=25.96 cfs 2.434 af Primary=25.96 cfs 2.434 af
<b>Link POA-B2: POA-B2 (BANK ST)</b>	Inflow=2.70 cfs 0.256 af Primary=2.70 cfs 0.256 af
<b>Link POA-BIA: POA-B1A (ROCKY BROOK 24" HW)</b>	Inflow=10.26 cfs 0.976 af Primary=10.26 cfs 0.976 af
<b>Link POA-E3: POA-E3 (12" RCP)</b>	Inflow=0.52 cfs 0.049 af Primary=0.52 cfs 0.049 af
<b>Link POA-E4: POA-E4 (24" RCP)</b>	Inflow=10.26 cfs 0.976 af Primary=10.26 cfs 0.976 af
<b>Link POA-E5: POA-E5 (10" TER)</b>	Inflow=1.32 cfs 0.128 af Primary=1.32 cfs 0.128 af
<b>Link POA-E6: POA-E6 (8" PVC)</b>	Inflow=3.53 cfs 0.339 af Primary=3.53 cfs 0.339 af

**Total Runoff Area = 4.280 ac Runoff Volume = 2.690 af Average Runoff Depth = 7.54"**  
**38.69% Pervious = 1.656 ac 61.31% Impervious = 2.624 ac**

**Summary for Subcatchment EB-1: EB-1**

Runoff = 1.66 cfs @ 12.14 hrs, Volume= 0.155 af, Depth= 7.44"

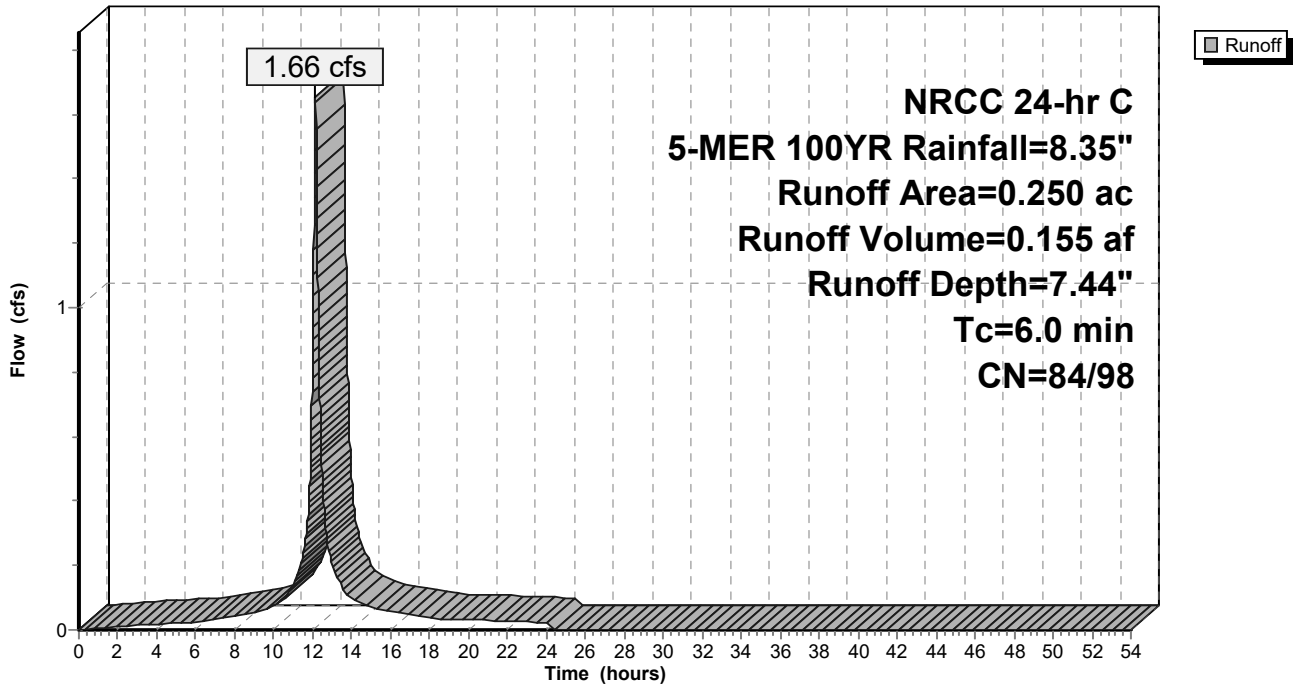
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 5-MER 100YR Rainfall=8.35"

Area (ac)	CN	Description
0.150	98	Roofs, HSG C
0.020	98	Unconnected pavement, HSG D
0.080	80	>75% Grass cover, Good, HSG D
0.250	92	Weighted Average
0.100	84	40.00% Pervious Area
0.150	98	60.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EB-1: EB-1**

Hydrograph



**Summary for Subcatchment EB-2: EB-2**

Runoff = 0.52 cfs @ 12.14 hrs, Volume= 0.049 af, Depth= 7.36"

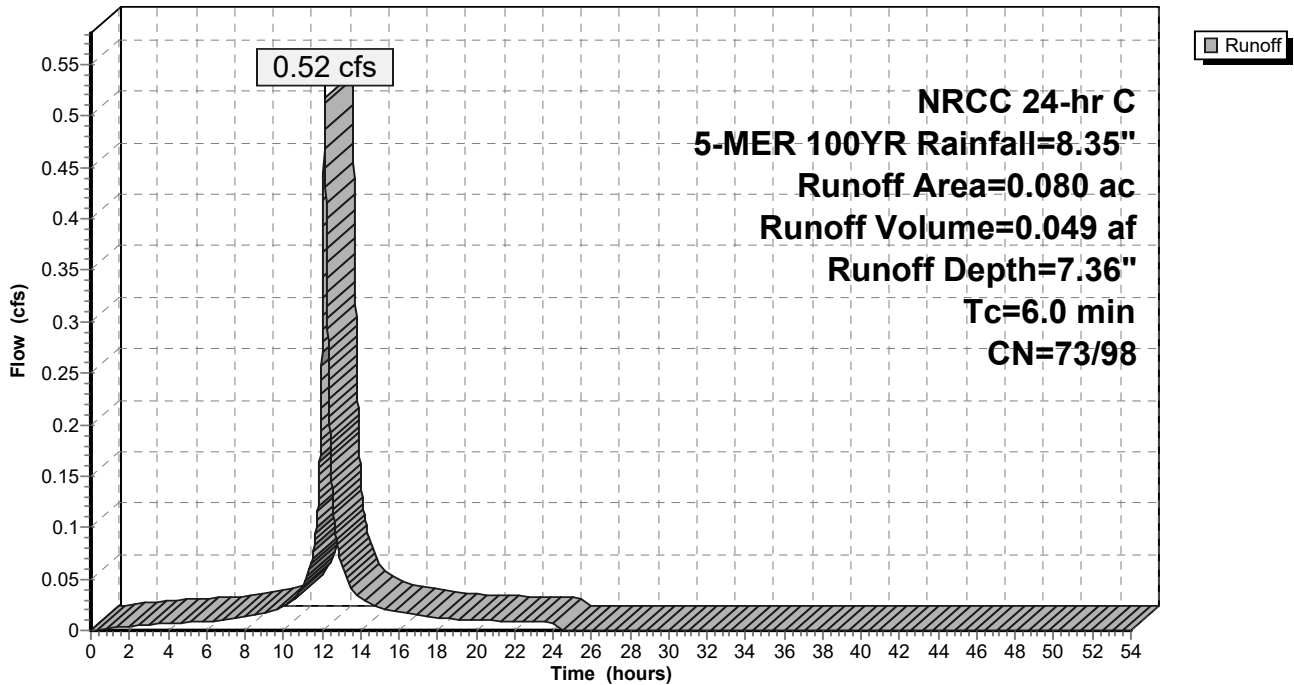
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 5-MER 100YR Rainfall=8.35"

Area (ac)	CN	Description
0.060	98	Roofs, HSG D
0.020	73	Brush, Good, HSG D
0.080	92	Weighted Average
0.020	73	25.00% Pervious Area
0.060	98	75.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EB-2: EB-2**

Hydrograph





**Summary for Subcatchment EB-3: EB-3**

Runoff = 10.33 cfs @ 12.14 hrs, Volume= 0.941 af, Depth= 7.19"

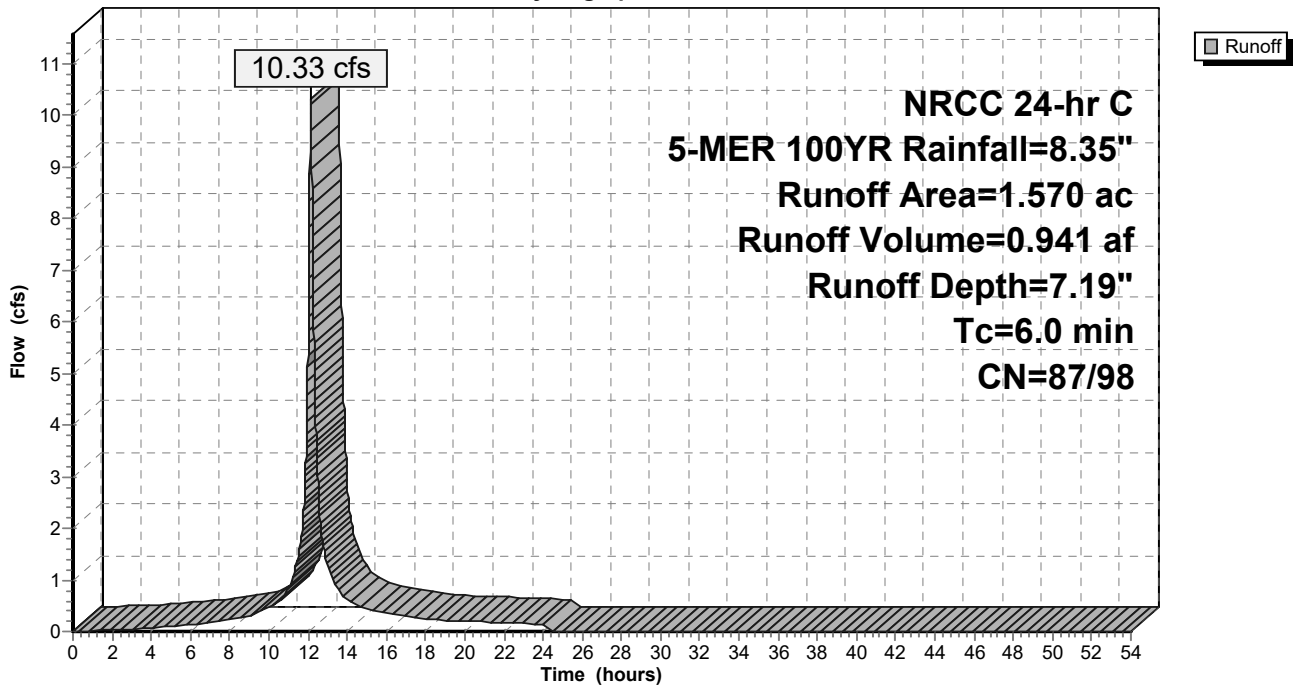
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 5-MER 100YR Rainfall=8.35"

Area (ac)	CN	Description
0.300	98	Roofs, HSG C
0.600	91	Gravel roads, HSG D
0.160	98	Paved parking, HSG D
0.350	80	>75% Grass cover, Good, HSG D
* 0.140	86	Wetlands
0.020	98	Roofs, HSG C
1.570	90	Weighted Average
1.090	87	69.43% Pervious Area
0.480	98	30.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EB-3: EB-3**

Hydrograph



**Summary for Subcatchment EB-4: EB-4**

Runoff = 10.26 cfs @ 12.14 hrs, Volume= 0.976 af, Depth= 7.71"

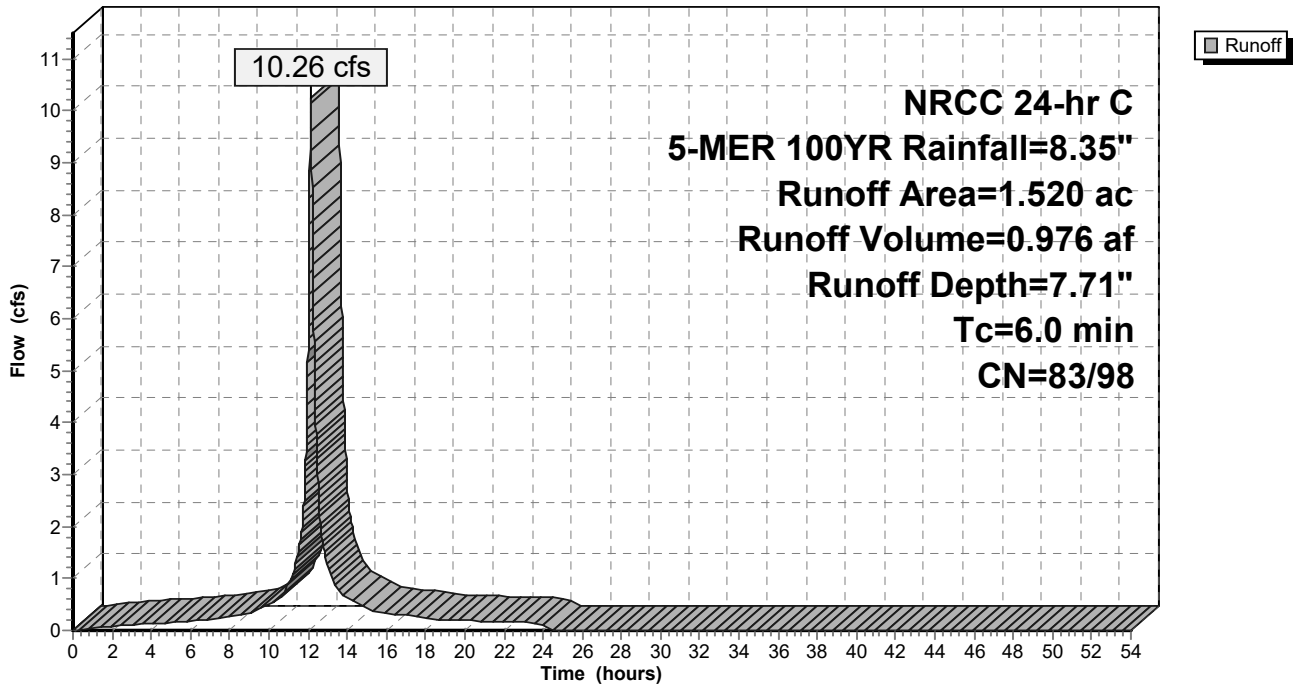
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 5-MER 100YR Rainfall=8.35"

Area (ac)	CN	Description
* 0.230	98	Roofs
* 0.050	98	Unconnected pavement
* 0.950	98	Paved parking
0.290	80	>75% Grass cover, Good, HSG D
1.520	95	Weighted Average
0.340	83	22.37% Pervious Area
1.180	98	77.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EB-4: EB-4**

Hydrograph



**Summary for Subcatchment EB-5: EB-5**

Runoff = 1.32 cfs @ 12.14 hrs, Volume= 0.128 af, Depth= 8.11"

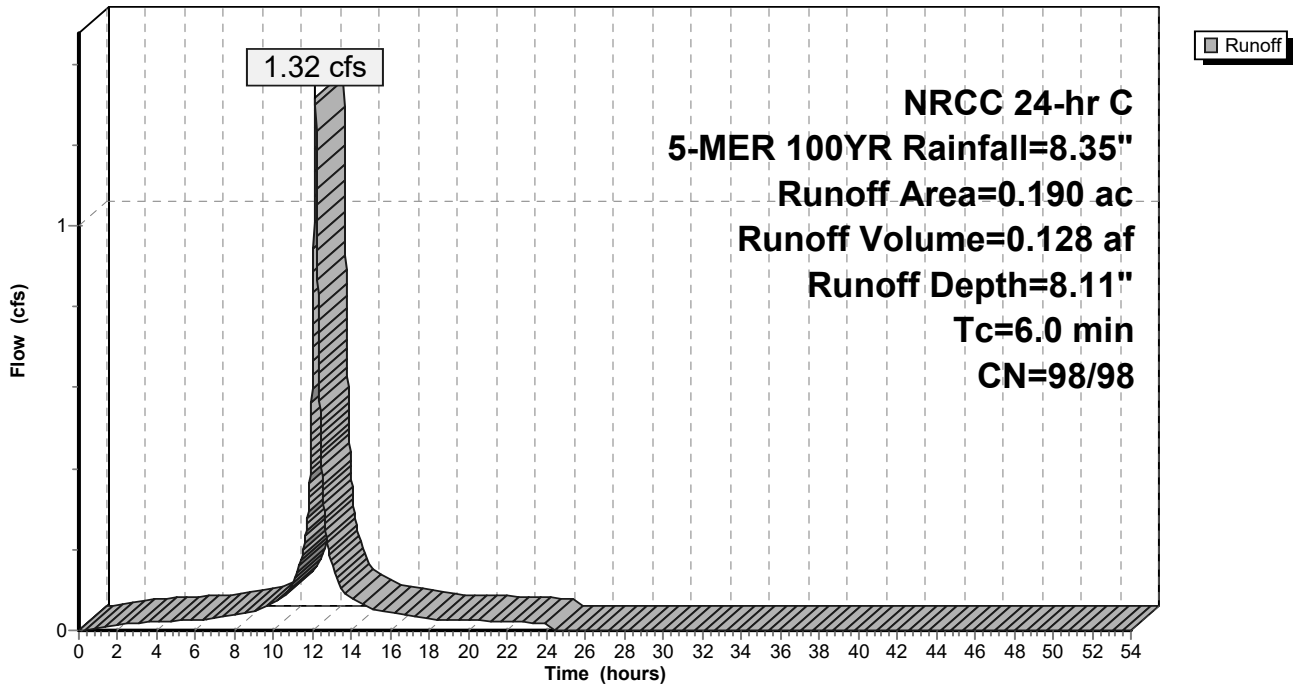
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 5-MER 100YR Rainfall=8.35"

Area (ac)	CN	Description
* 0.010	98	Unconnected pavement
* 0.180	98	Paved parking
0.190	98	Weighted Average
0.010	98	5.26% Pervious Area
0.180	98	94.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EB-5: EB-5**

Hydrograph



**Summary for Subcatchment EB-6: EB-6**

Runoff = 2.64 cfs @ 12.14 hrs, Volume= 0.257 af, Depth= 8.11"

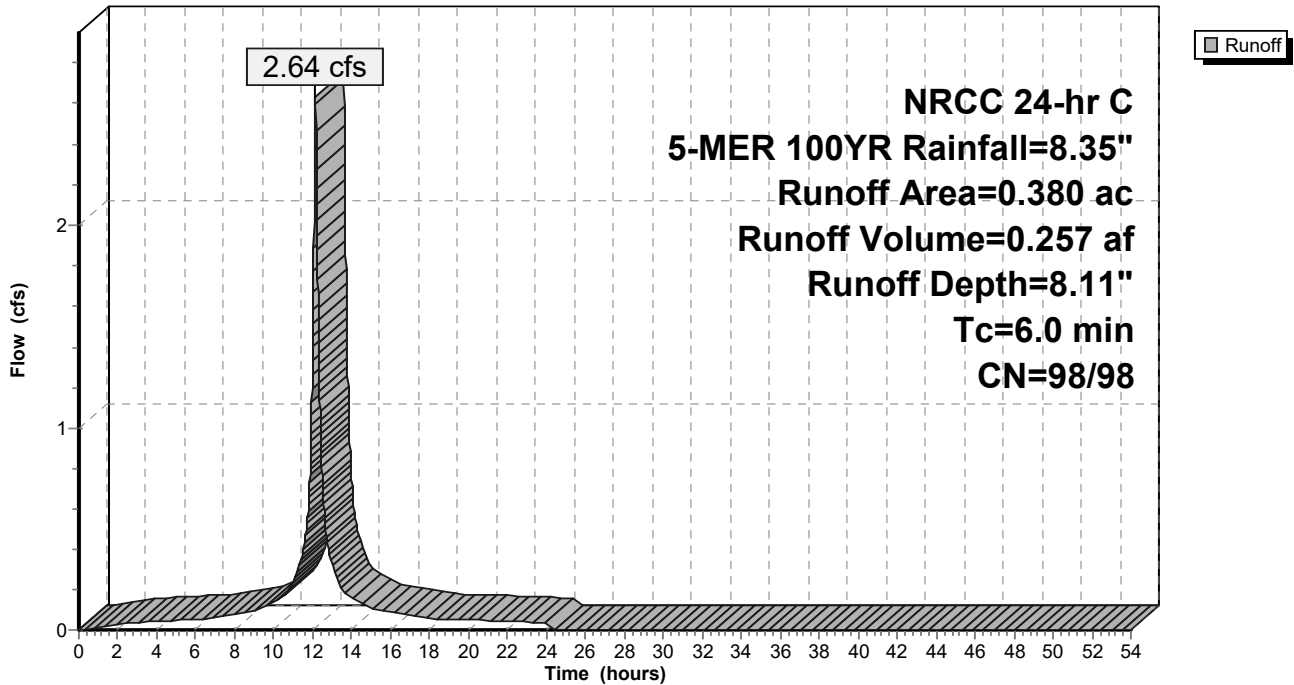
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 5-MER 100YR Rainfall=8.35"

Area (ac)	CN	Description
* 0.251	98	Roofs
* 0.027	98	Unconnected pavement
* 0.102	98	Paved parking
0.380	98	Weighted Average
0.027	98	7.11% Pervious Area
0.353	98	92.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EB-6: EB-6**

Hydrograph



**Summary for Subcatchment EB-7: EB-7**

Runoff = 0.89 cfs @ 12.14 hrs, Volume= 0.082 af, Depth= 7.05"

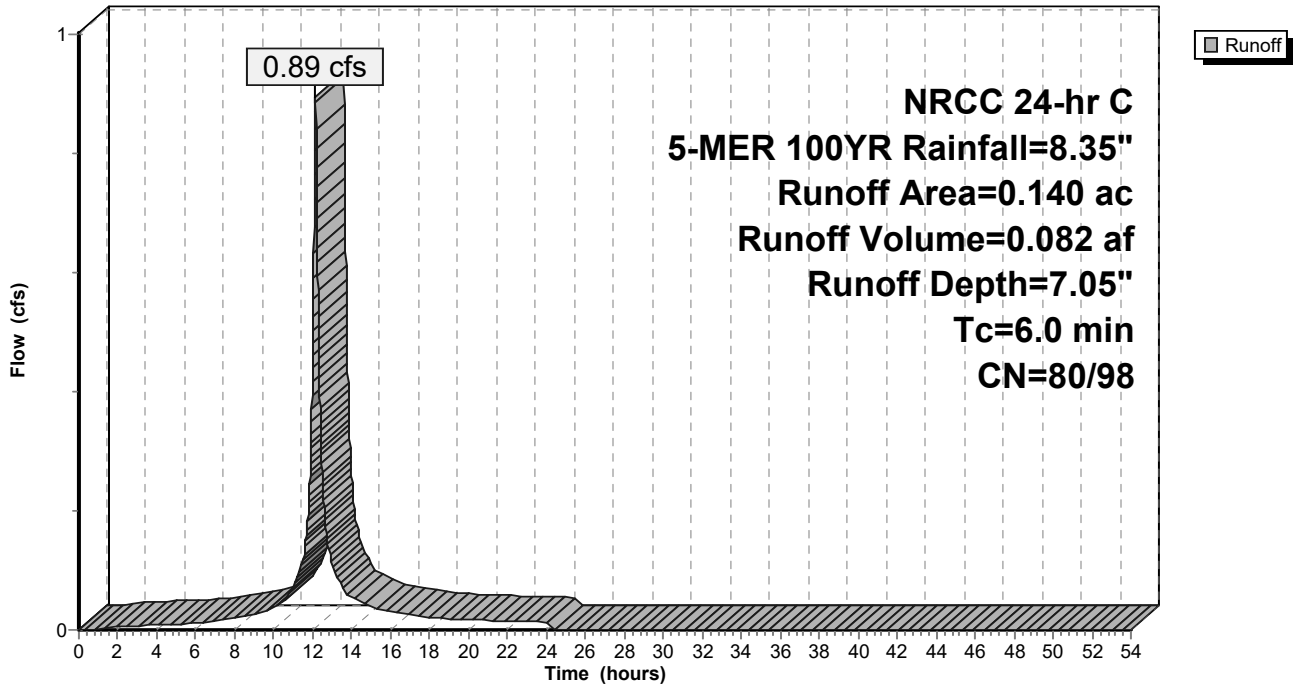
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 5-MER 100YR Rainfall=8.35"

Area (ac)	CN	Description
0.031	98	Paved parking, HSG D
0.040	98	Roofs, HSG D
0.069	80	>75% Grass cover, Good, HSG D
0.140	89	Weighted Average
0.069	80	49.29% Pervious Area
0.071	98	50.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EB-7: EB-7**

Hydrograph



### Summary for Subcatchment EB-8-ROW: EB-8-ROW

Runoff = 1.04 cfs @ 12.14 hrs, Volume= 0.101 af, Depth= 8.11"

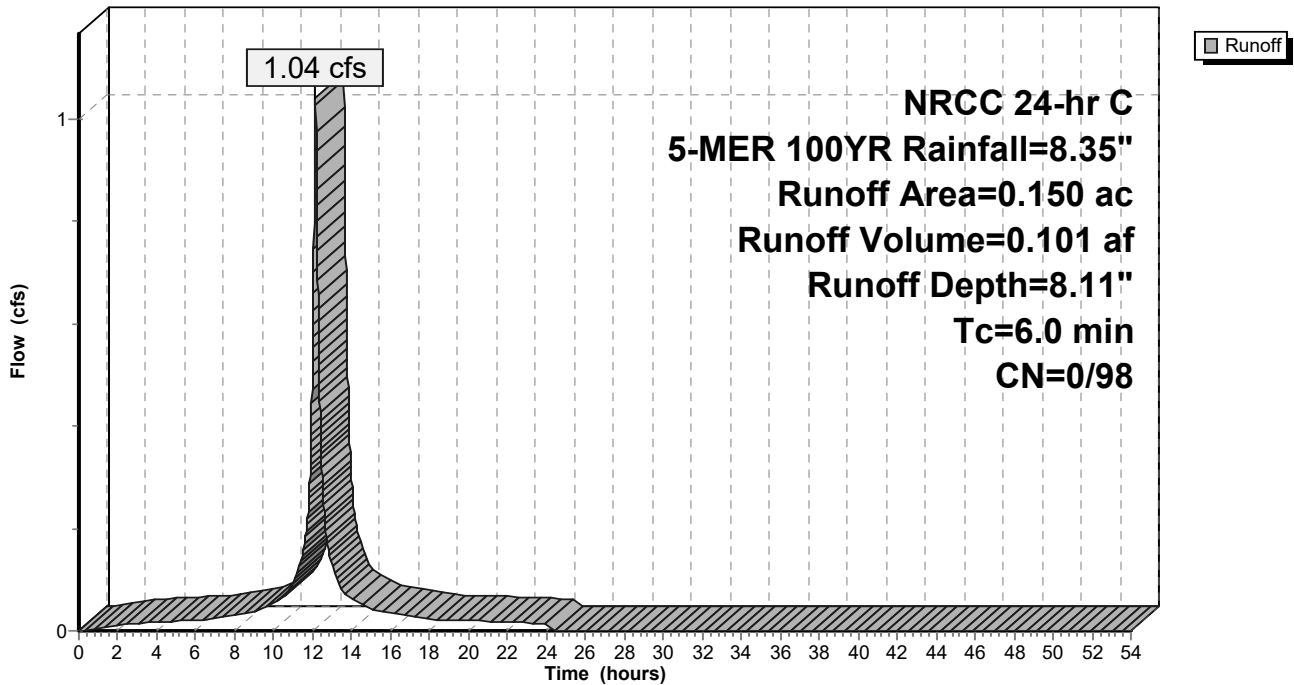
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 5-MER 100YR Rainfall=8.35"

Area (ac)	CN	Description
0.150	98	Paved parking, HSG D
0.150	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

### Subcatchment EB-8-ROW: EB-8-ROW

Hydrograph



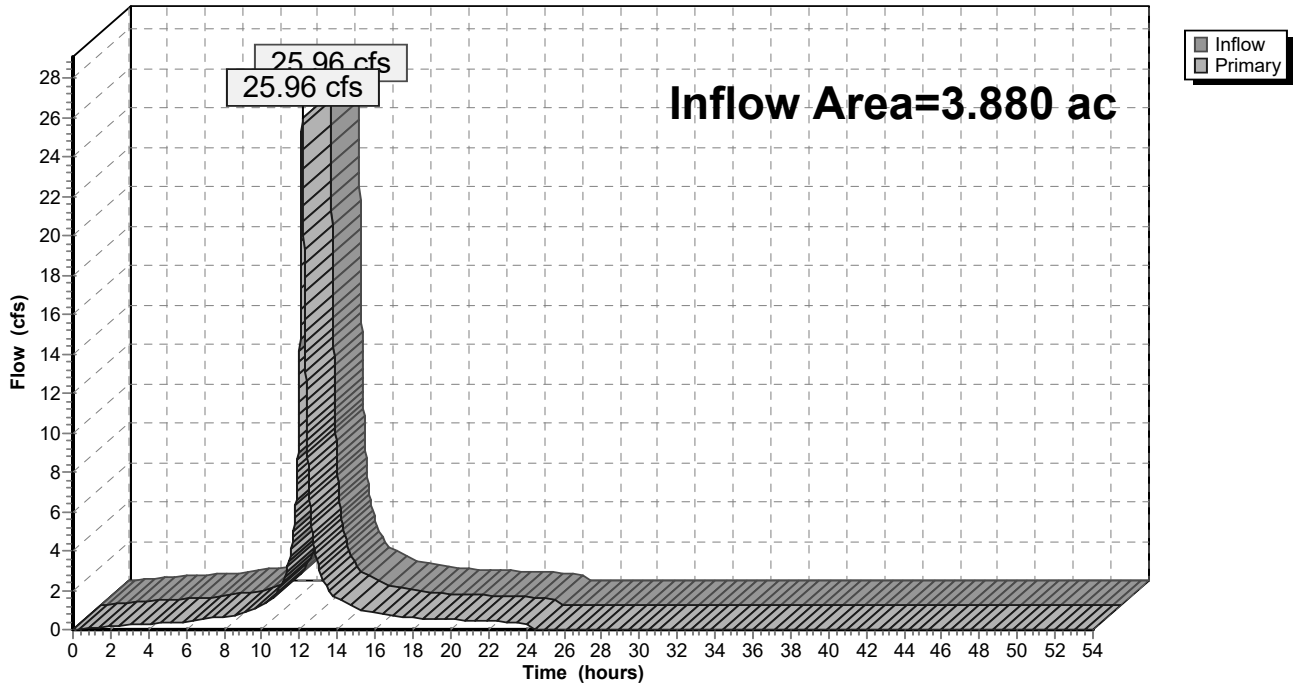
### Summary for Link POA-B1: POA-B1(ROCKY BROOK CULVERT)

Inflow Area = 3.880 ac, 59.90% Impervious, Inflow Depth = 7.53" for 5-MER 100YR event  
Inflow = 25.96 cfs @ 12.14 hrs, Volume= 2.434 af  
Primary = 25.96 cfs @ 12.14 hrs, Volume= 2.434 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-B1: POA-B1(ROCKY BROOK CULVERT)

Hydrograph

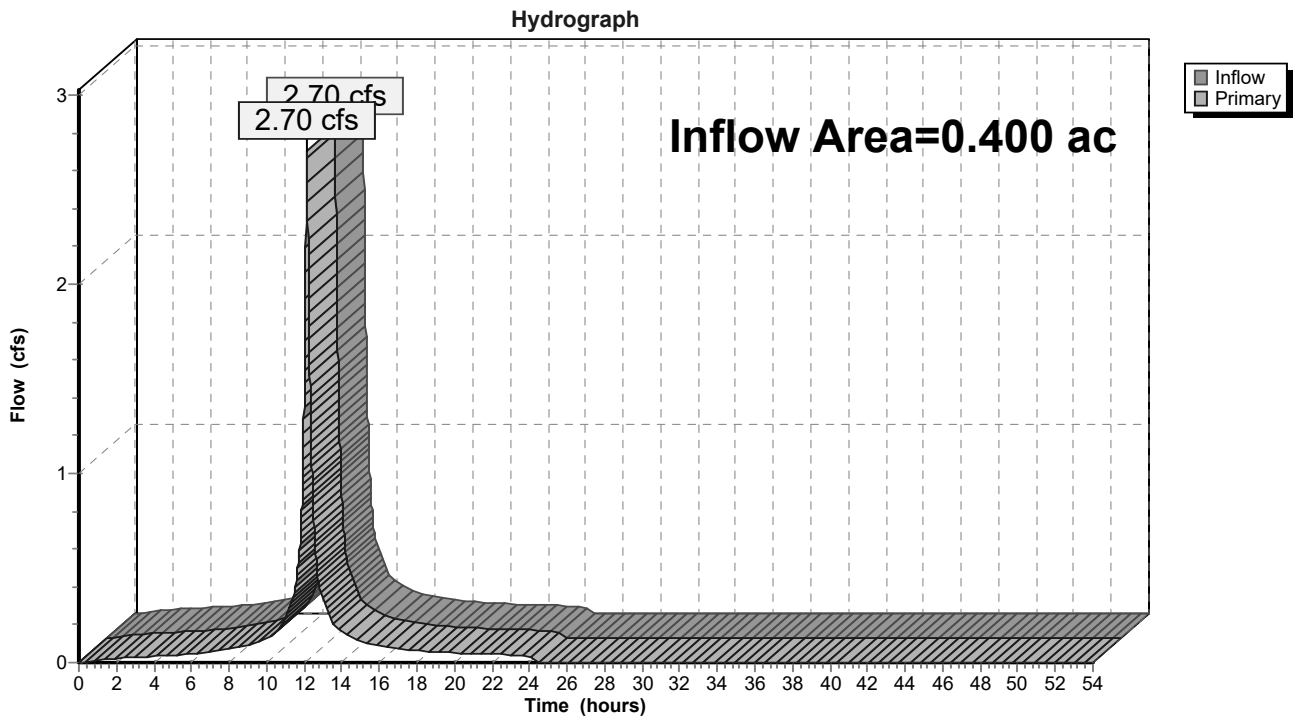


### Summary for Link POA-B2: POA-B2 (BANK ST)

Inflow Area = 0.400 ac, 75.00% Impervious, Inflow Depth = 7.69" for 5-MER 100YR event  
Inflow = 2.70 cfs @ 12.14 hrs, Volume= 0.256 af  
Primary = 2.70 cfs @ 12.14 hrs, Volume= 0.256 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-B2: POA-B2 (BANK ST)



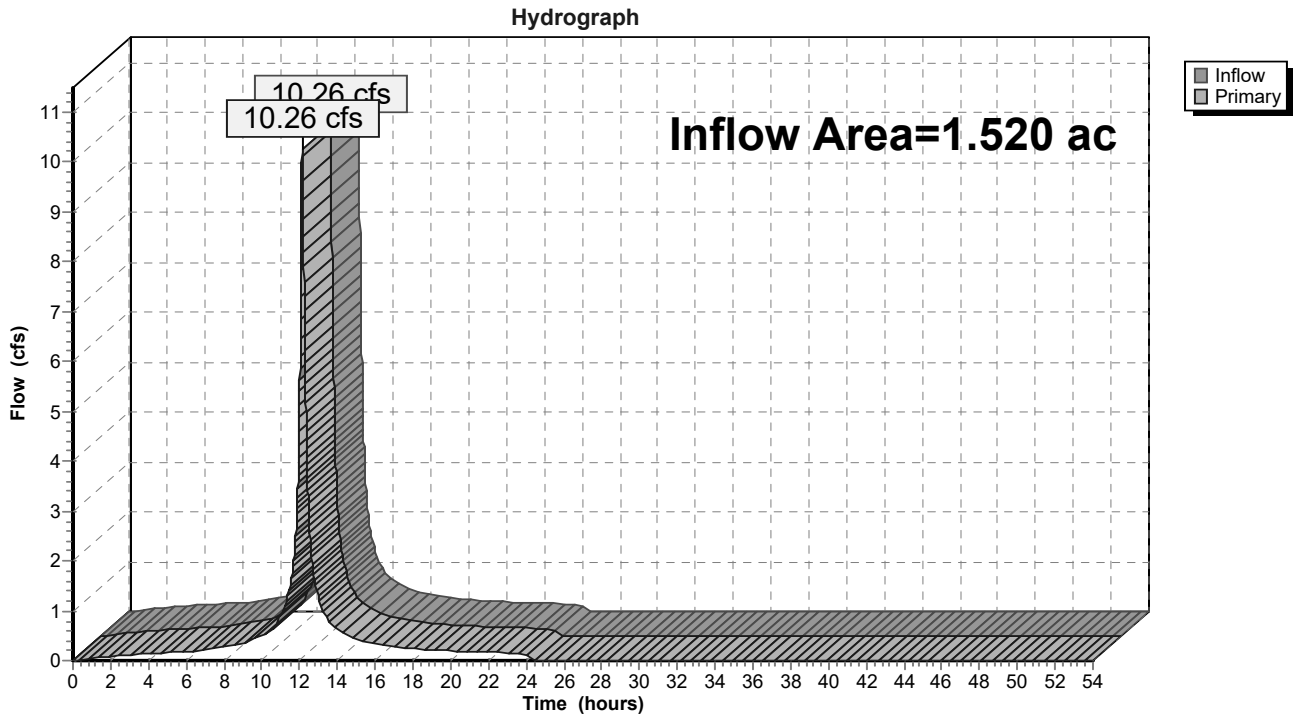


### Summary for Link POA-BIA: POA-B1A (ROCKY BROOK 24" HW)

Inflow Area = 1.520 ac, 77.63% Impervious, Inflow Depth = 7.71" for 5-MER 100YR event  
Inflow = 10.26 cfs @ 12.14 hrs, Volume= 0.976 af  
Primary = 10.26 cfs @ 12.14 hrs, Volume= 0.976 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-BIA: POA-B1A (ROCKY BROOK 24" HW)



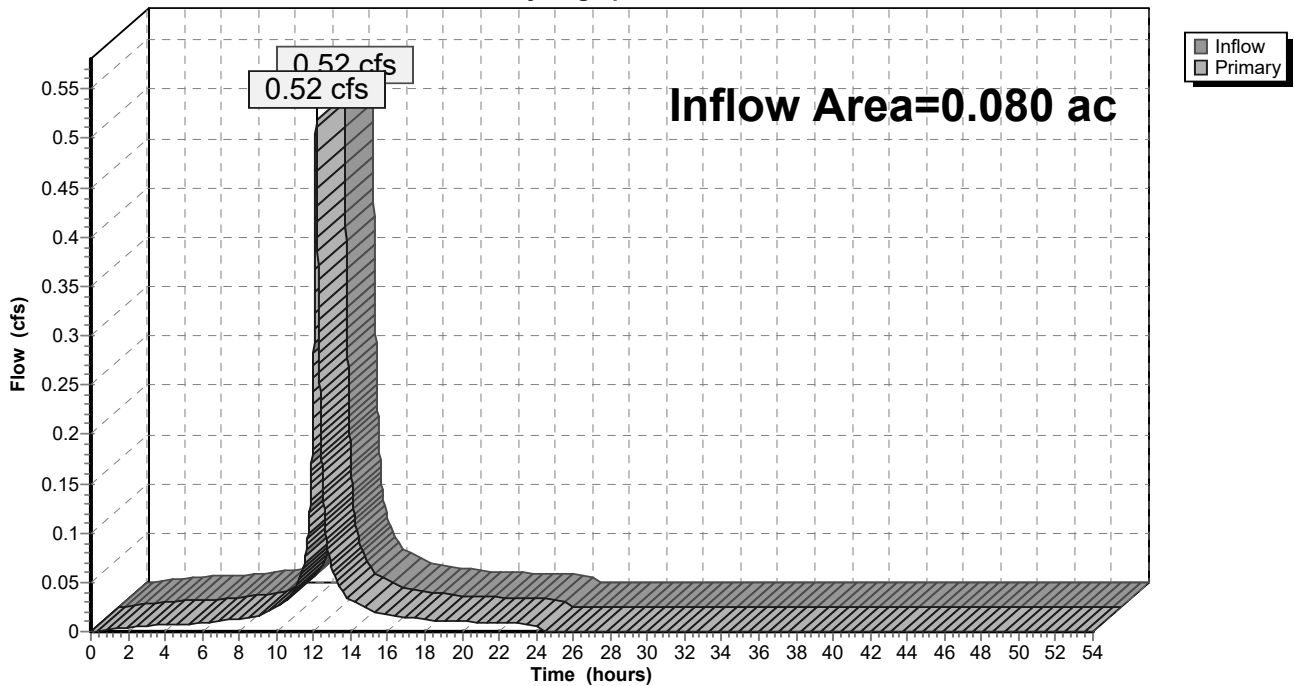
### Summary for Link POA-E3: POA-E3 (12" RCP)

Inflow Area = 0.080 ac, 75.00% Impervious, Inflow Depth = 7.36" for 5-MER 100YR event  
Inflow = 0.52 cfs @ 12.14 hrs, Volume= 0.049 af  
Primary = 0.52 cfs @ 12.14 hrs, Volume= 0.049 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-E3: POA-E3 (12" RCP)

Hydrograph

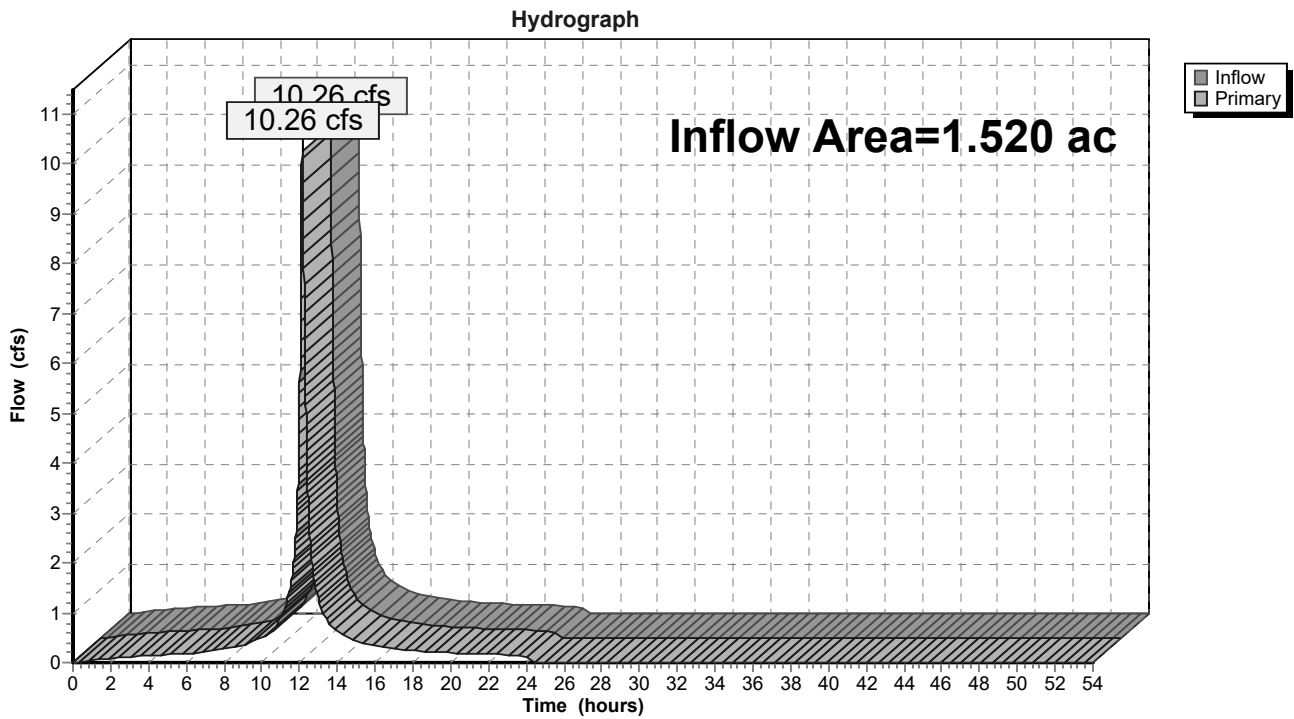


### Summary for Link POA-E4: POA-E4 (24" RCP)

Inflow Area = 1.520 ac, 77.63% Impervious, Inflow Depth = 7.71" for 5-MER 100YR event  
Inflow = 10.26 cfs @ 12.14 hrs, Volume= 0.976 af  
Primary = 10.26 cfs @ 12.14 hrs, Volume= 0.976 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-E4: POA-E4 (24" RCP)

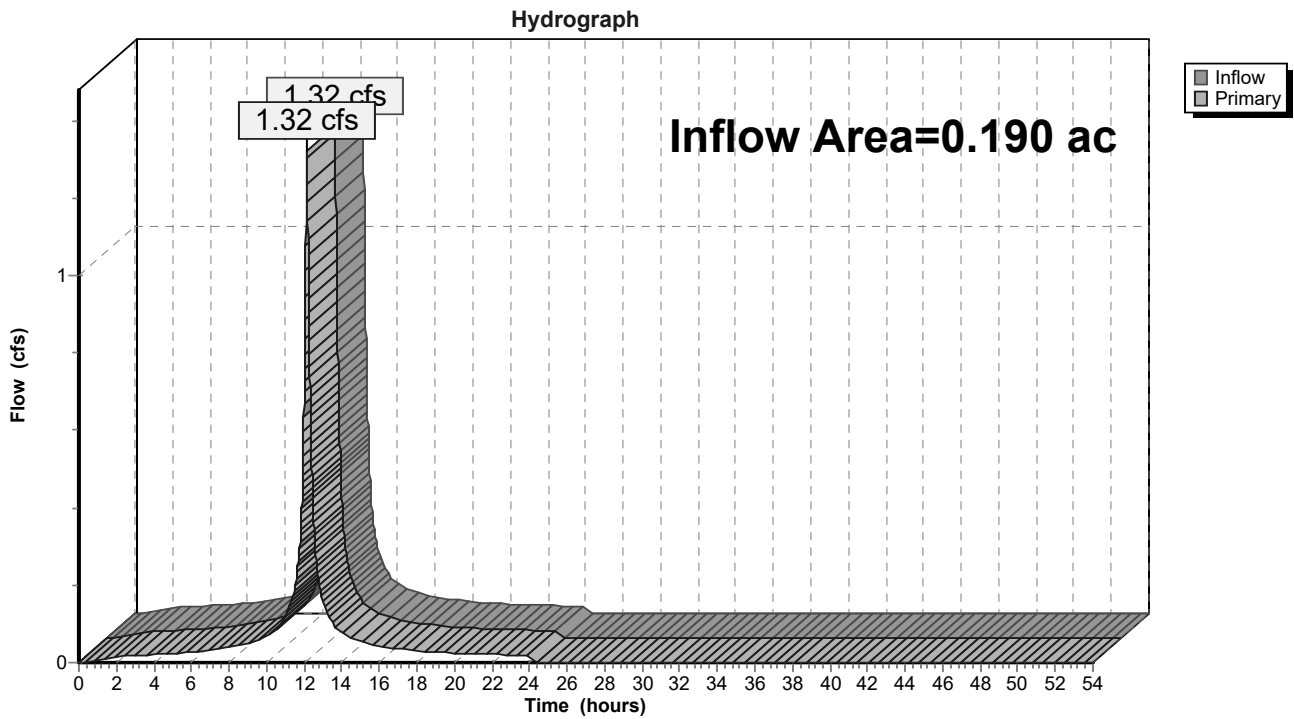


### Summary for Link POA-E5: POA-E5 (10" TER)

Inflow Area = 0.190 ac, 94.74% Impervious, Inflow Depth = 8.11" for 5-MER 100YR event  
Inflow = 1.32 cfs @ 12.14 hrs, Volume= 0.128 af  
Primary = 1.32 cfs @ 12.14 hrs, Volume= 0.128 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-E5: POA-E5 (10" TER)

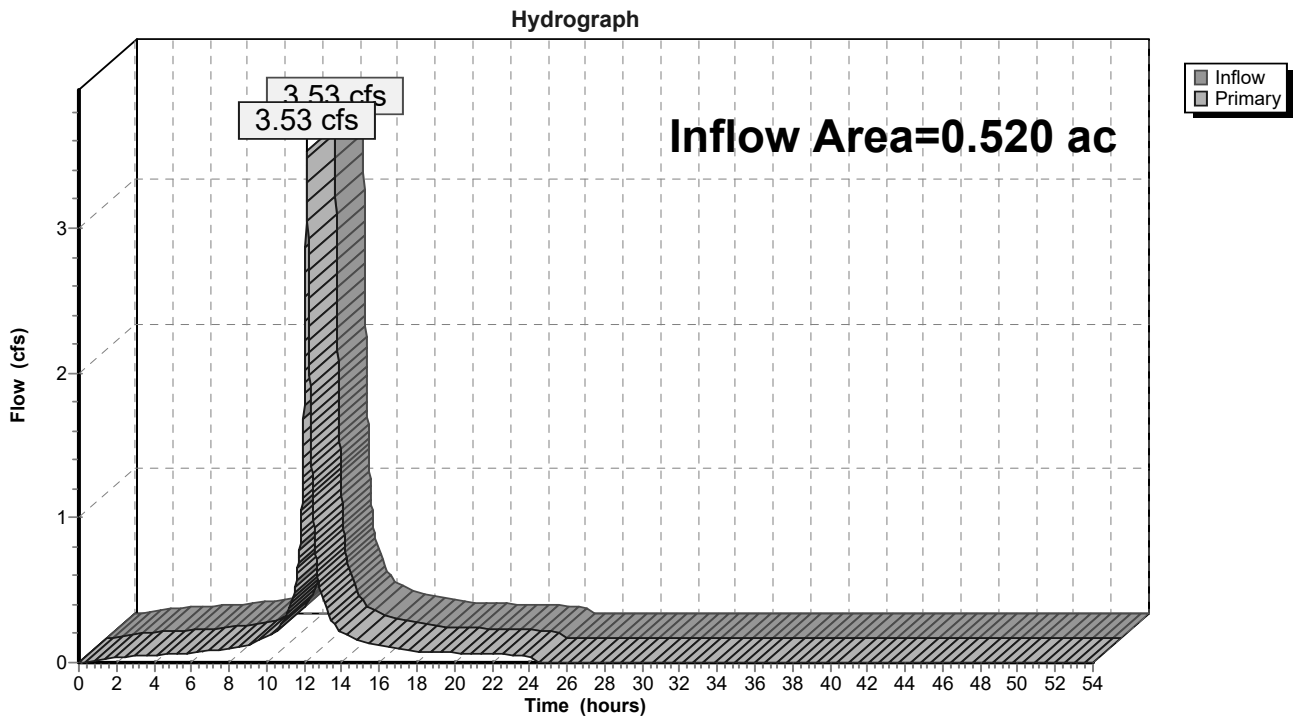


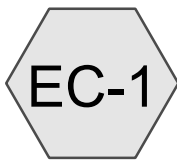
### Summary for Link POA-E6: POA-E6 (8" PVC)

Inflow Area = 0.520 ac, 81.54% Impervious, Inflow Depth = 7.82" for 5-MER 100YR event  
Inflow = 3.53 cfs @ 12.14 hrs, Volume= 0.339 af  
Primary = 3.53 cfs @ 12.14 hrs, Volume= 0.339 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-E6: POA-E6 (8" PVC)

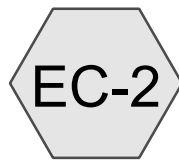




EC-1



POA-C1 (ROCKY BROOK)



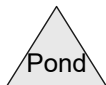
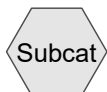
EC-2



EC-3-ROW



POA-C2 (BANK STREET)



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### **Project Notes**

Rainfall events imported from "200330\_Analysis.hcp"

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### Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-MER 1YR	NRCC 24-hr	C	Default	24.00	1	2.74	2
2	2-MER 2YR	NRCC 24-hr	C	Default	24.00	1	3.31	2
3	3-MER 10YR	NRCC 24-hr	C	Default	24.00	1	5.02	2
4	4-MER 25YR	NRCC 24-hr	C	Default	24.00	1	6.20	2
5	5-MER 100YR	NRCC 24-hr	C	Default	24.00	1	8.35	2
6	NJDEP WQ	NJ DEP 2-hr		Default	2.00	1	1.25	2



**Area Listing (selected nodes)**

Area (acres)	CN	Description (subcatchment-numbers)
0.082	48	Brush, Good, HSG B (EC-2, EC-3-ROW)
0.018	96	Gravel surface, HSG A (EC-1, EC-3-ROW)
0.083	96	Gravel surface, HSG B (EC-1, EC-2)
0.020	98	Paved roads w/curbs & sewers, HSG A (EC-3-ROW)
0.021	98	Paved roads w/curbs & sewers, HSG B (EC-3-ROW)
0.044	98	Roofs, HSG A (EC-1)
0.021	98	Roofs, HSG B (EC-1)
0.016	30	Woods, Good, HSG A (EC-3-ROW)
0.196	32	Woods/grass comb., Good, HSG A (EC-1)
0.049	58	Woods/grass comb., Good, HSG B (EC-1)
<b>0.550</b>	<b>61</b>	<b>TOTAL AREA</b>

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### Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.294	HSG A	EC-1, EC-3-ROW
0.256	HSG B	EC-1, EC-2, EC-3-ROW
0.000	HSG C	
0.000	HSG D	
0.000	Other	
<b>0.550</b>		<b>TOTAL AREA</b>

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**Ground Covers (selected nodes)**

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.082	0.000	0.000	0.000	0.082	Brush, Good	EC- 2, EC- 3-R OW
0.018	0.083	0.000	0.000	0.000	0.101	Gravel surface	EC- 1, EC- 2, EC- 3-R OW
0.020	0.021	0.000	0.000	0.000	0.041	Paved roads w/curbs & sewers	EC- 3-R OW
0.044	0.021	0.000	0.000	0.000	0.065	Roofs	EC- 1
0.016	0.000	0.000	0.000	0.000	0.016	Woods, Good	EC- 3-R OW
0.196	0.049	0.000	0.000	0.000	0.245	Woods/grass comb., Good	EC- 1
<b>0.294</b>	<b>0.256</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.550</b>	<b>TOTAL AREA</b>	

**200811\_Model**

NRCC 24-hr C 1-MER 1YR Rainfall=2.74"

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Time span=0.00-54.00 hrs, dt=0.01 hrs, 5401 points  
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious  
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment EC-1: EC-1**

Runoff Area=0.350 ac 18.57% Impervious Runoff Depth=0.47"  
Flow Length=230' Tc=6.0 min CN=45/98 Runoff=0.15 cfs 0.014 af

**Subcatchment EC-2: EC-2**

Runoff Area=0.130 ac 0.00% Impervious Runoff Depth=0.57"  
Tc=6.0 min CN=70/0 Runoff=0.06 cfs 0.006 af

**Subcatchment EC-3-ROW: EC-3-ROW**

Runoff Area=0.070 ac 58.57% Impervious Runoff Depth=1.47"  
Tc=6.0 min CN=41/98 Runoff=0.09 cfs 0.009 af

**Link POA-C1: POA-C1 (ROCKY BROOK)**

Inflow=0.15 cfs 0.014 af  
Primary=0.15 cfs 0.014 af

**Link POA-C2: POA-C2 (BANK STREET)**

Inflow=0.15 cfs 0.015 af  
Primary=0.15 cfs 0.015 af

**Total Runoff Area = 0.550 ac Runoff Volume = 0.029 af Average Runoff Depth = 0.62"**  
**80.73% Pervious = 0.444 ac 19.27% Impervious = 0.106 ac**

**Summary for Subcatchment EC-1: EC-1**

Runoff = 0.15 cfs @ 12.14 hrs, Volume= 0.014 af, Depth= 0.47"

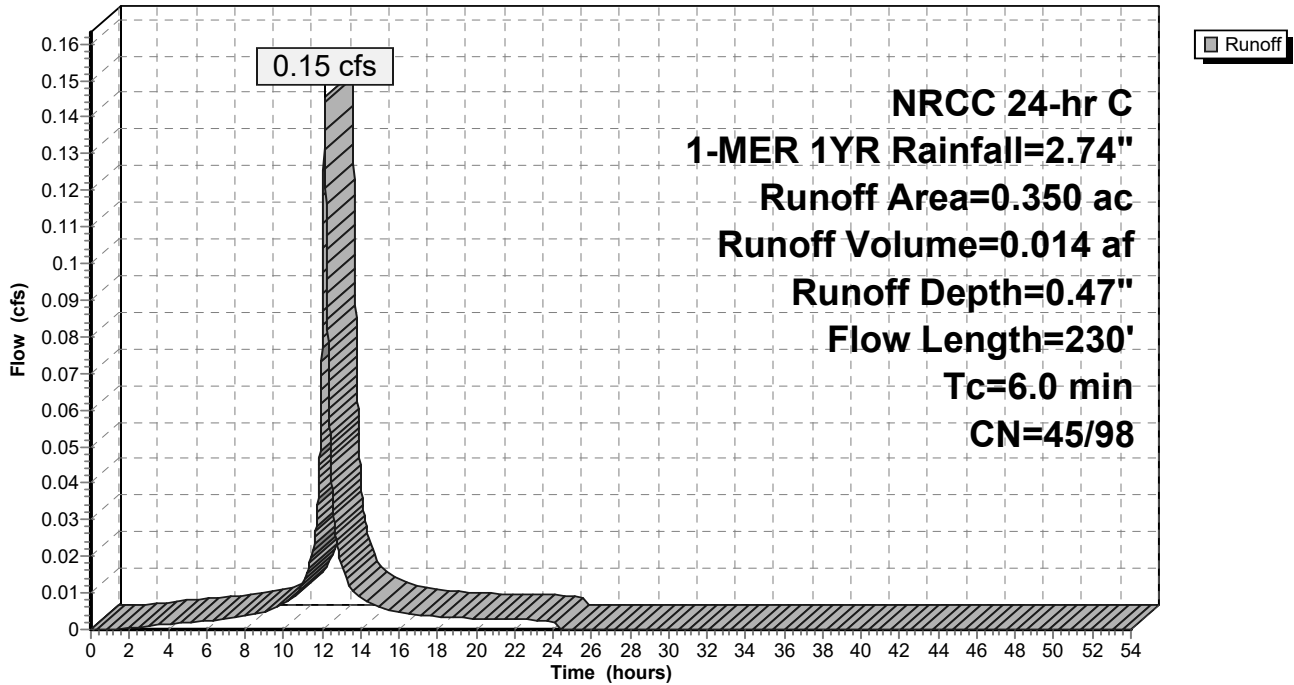
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 1-MER 1YR Rainfall=2.74"

Area (ac)	CN	Description
0.021	98	Roofs, HSG B
0.024	96	Gravel surface, HSG B
0.049	58	Woods/grass comb., Good, HSG B
0.044	98	Roofs, HSG A
0.016	96	Gravel surface, HSG A
0.196	32	Woods/grass comb., Good, HSG A
0.350	55	Weighted Average
0.285	45	81.43% Pervious Area
0.065	98	18.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	230		0.64		Direct Entry,

**Subcatchment EC-1: EC-1**

Hydrograph



**Summary for Subcatchment EC-2: EC-2**

Runoff = 0.06 cfs @ 12.15 hrs, Volume= 0.006 af, Depth= 0.57"

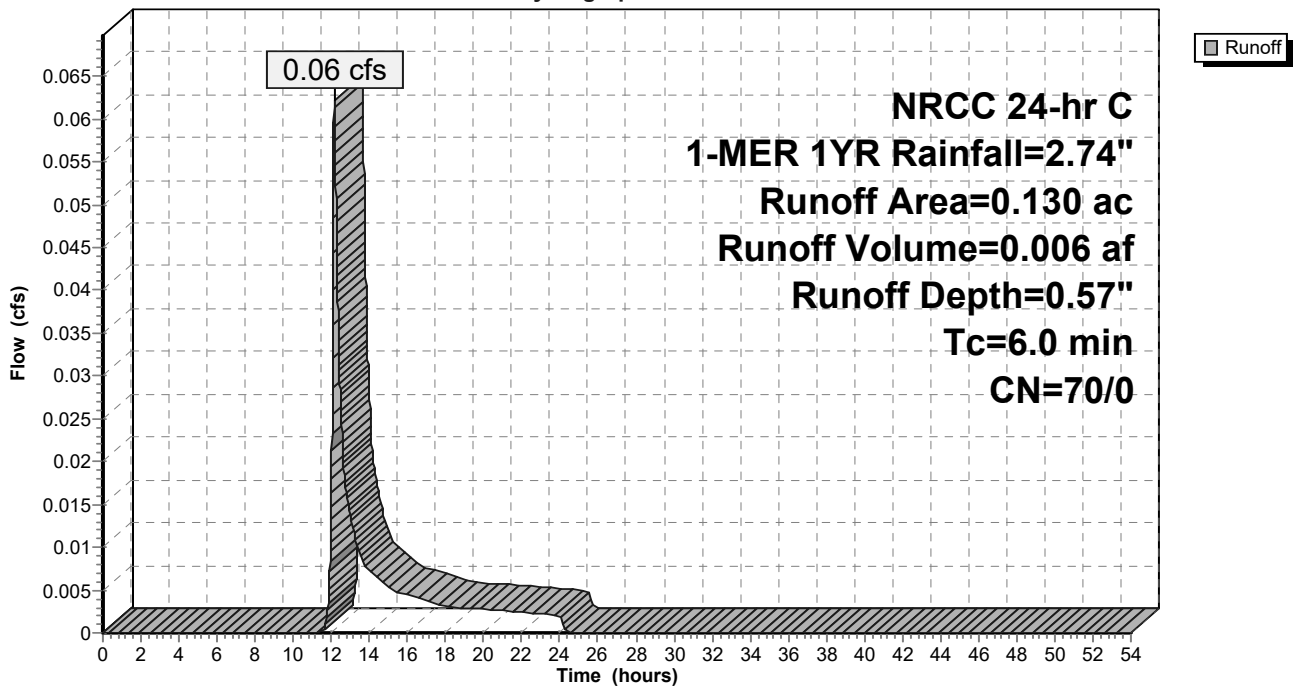
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 1-MER 1YR Rainfall=2.74"

Area (ac)	CN	Description
0.059	96	Gravel surface, HSG B
0.071	48	Brush, Good, HSG B
0.130	70	Weighted Average
0.130	70	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EC-2: EC-2**

Hydrograph



**Summary for Subcatchment EC-3-ROW: EC-3-ROW**

Runoff = 0.09 cfs @ 12.14 hrs, Volume= 0.009 af, Depth= 1.47"

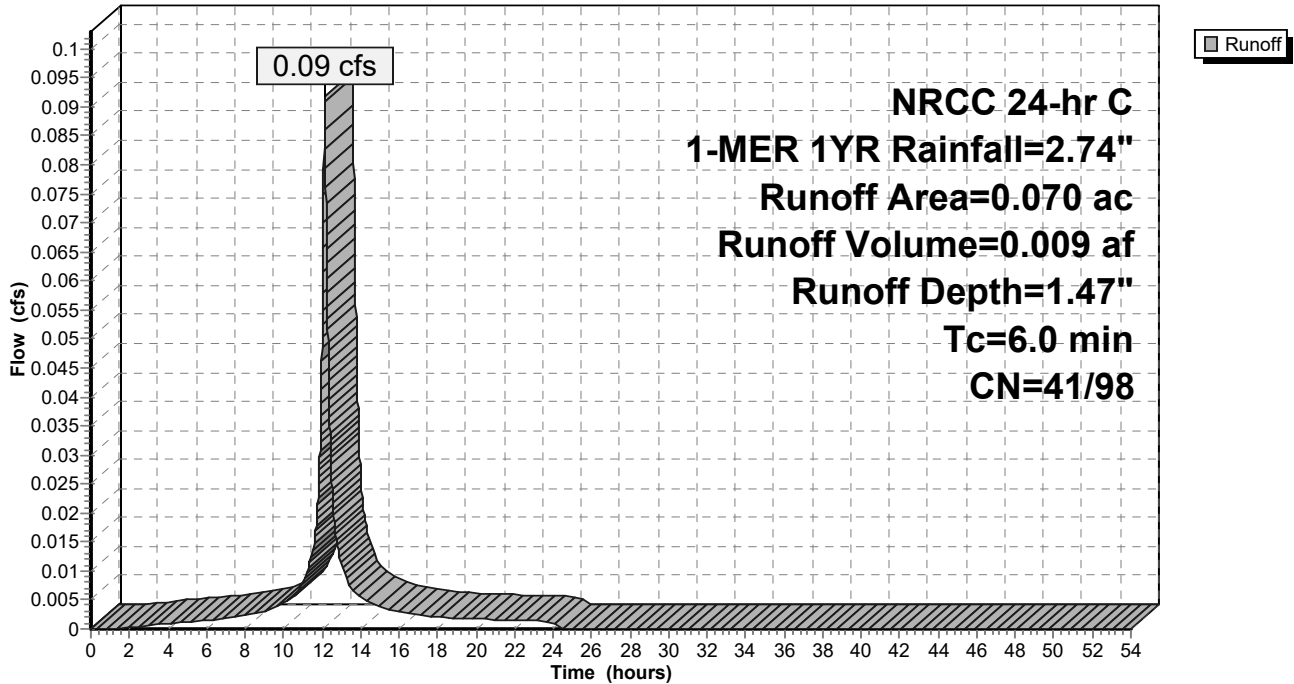
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 1-MER 1YR Rainfall=2.74"

Area (ac)	CN	Description
0.011	48	Brush, Good, HSG B
0.016	30	Woods, Good, HSG A
0.002	96	Gravel surface, HSG A
0.021	98	Paved roads w/curbs & sewers, HSG B
0.020	98	Paved roads w/curbs & sewers, HSG A
0.070	75	Weighted Average
0.029	41	41.43% Pervious Area
0.041	98	58.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EC-3-ROW: EC-3-ROW**

Hydrograph



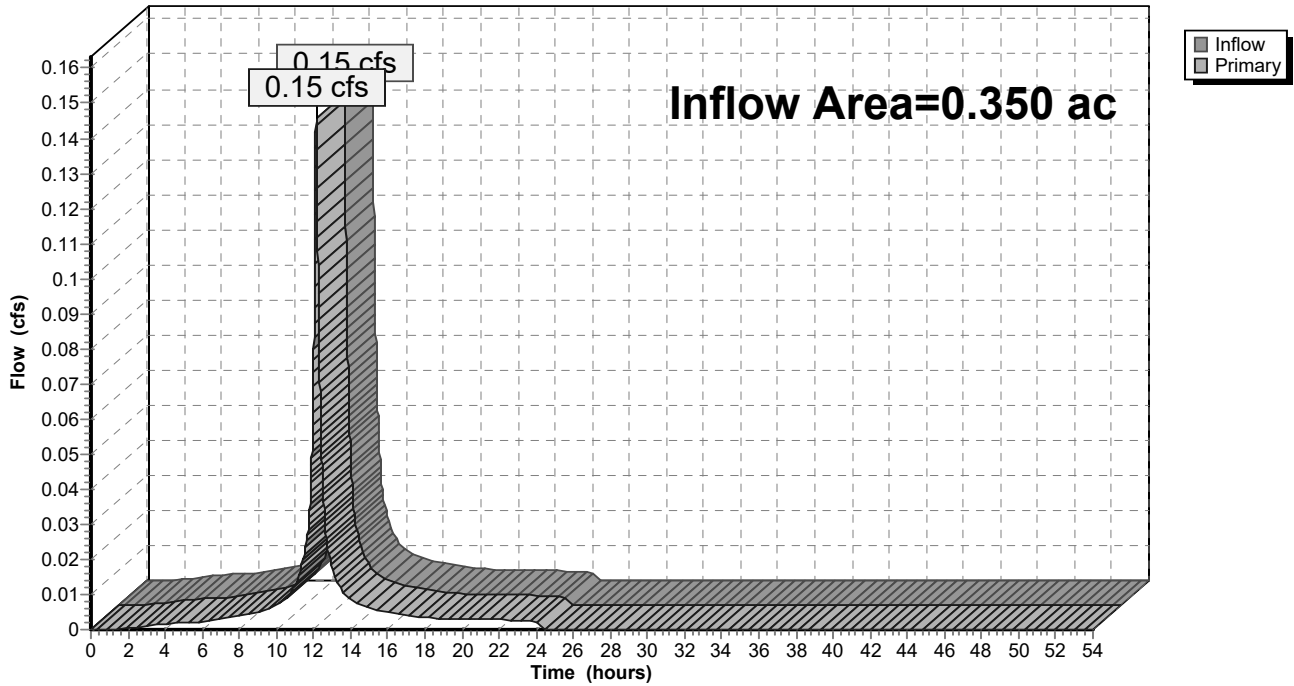
### Summary for Link POA-C1: POA-C1 (ROCKY BROOK)

Inflow Area = 0.350 ac, 18.57% Impervious, Inflow Depth = 0.47" for 1-MER 1YR event  
Inflow = 0.15 cfs @ 12.14 hrs, Volume= 0.014 af  
Primary = 0.15 cfs @ 12.14 hrs, Volume= 0.014 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-C1: POA-C1 (ROCKY BROOK)

Hydrograph





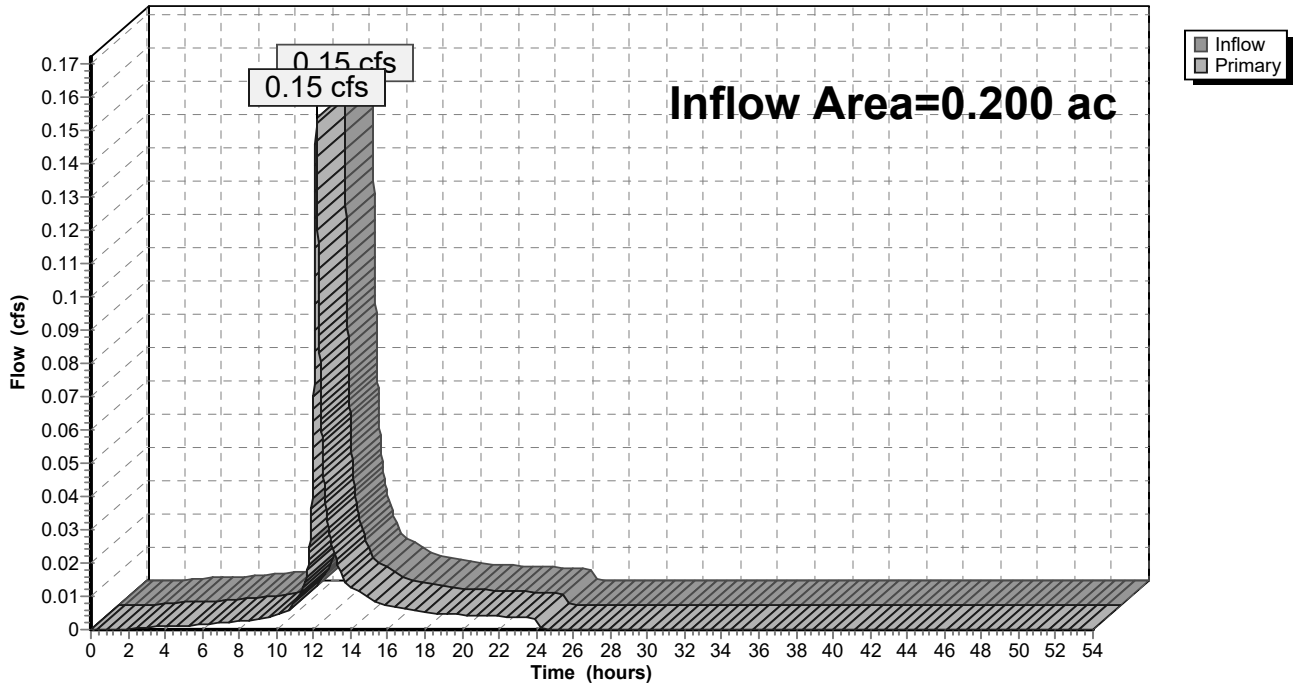
### Summary for Link POA-C2: POA-C2 (BANK STREET)

Inflow Area = 0.200 ac, 20.50% Impervious, Inflow Depth = 0.89" for 1-MER 1YR event  
Inflow = 0.15 cfs @ 12.15 hrs, Volume= 0.015 af  
Primary = 0.15 cfs @ 12.15 hrs, Volume= 0.015 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-C2: POA-C2 (BANK STREET)

Hydrograph



**200811\_Model**

NRCC 24-hr C 2-MER 2YR Rainfall=3.31"

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Time span=0.00-54.00 hrs, dt=0.01 hrs, 5401 points  
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious  
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment EC-1: EC-1**

Runoff Area=0.350 ac 18.57% Impervious Runoff Depth=0.62"  
Flow Length=230' Tc=6.0 min CN=45/98 Runoff=0.18 cfs 0.018 af

**Subcatchment EC-2: EC-2**

Runoff Area=0.130 ac 0.00% Impervious Runoff Depth=0.89"  
Tc=6.0 min CN=70/0 Runoff=0.11 cfs 0.010 af

**Subcatchment EC-3-ROW: EC-3-ROW**

Runoff Area=0.070 ac 58.57% Impervious Runoff Depth=1.81"  
Tc=6.0 min CN=41/98 Runoff=0.11 cfs 0.011 af

**Link POA-C1: POA-C1 (ROCKY BROOK)**

Inflow=0.18 cfs 0.018 af  
Primary=0.18 cfs 0.018 af

**Link POA-C2: POA-C2 (BANK STREET)**

Inflow=0.22 cfs 0.020 af  
Primary=0.22 cfs 0.020 af

**Total Runoff Area = 0.550 ac Runoff Volume = 0.038 af Average Runoff Depth = 0.83"**  
**80.73% Pervious = 0.444 ac 19.27% Impervious = 0.106 ac**

**Summary for Subcatchment EC-1: EC-1**

Runoff = 0.18 cfs @ 12.14 hrs, Volume= 0.018 af, Depth= 0.62"

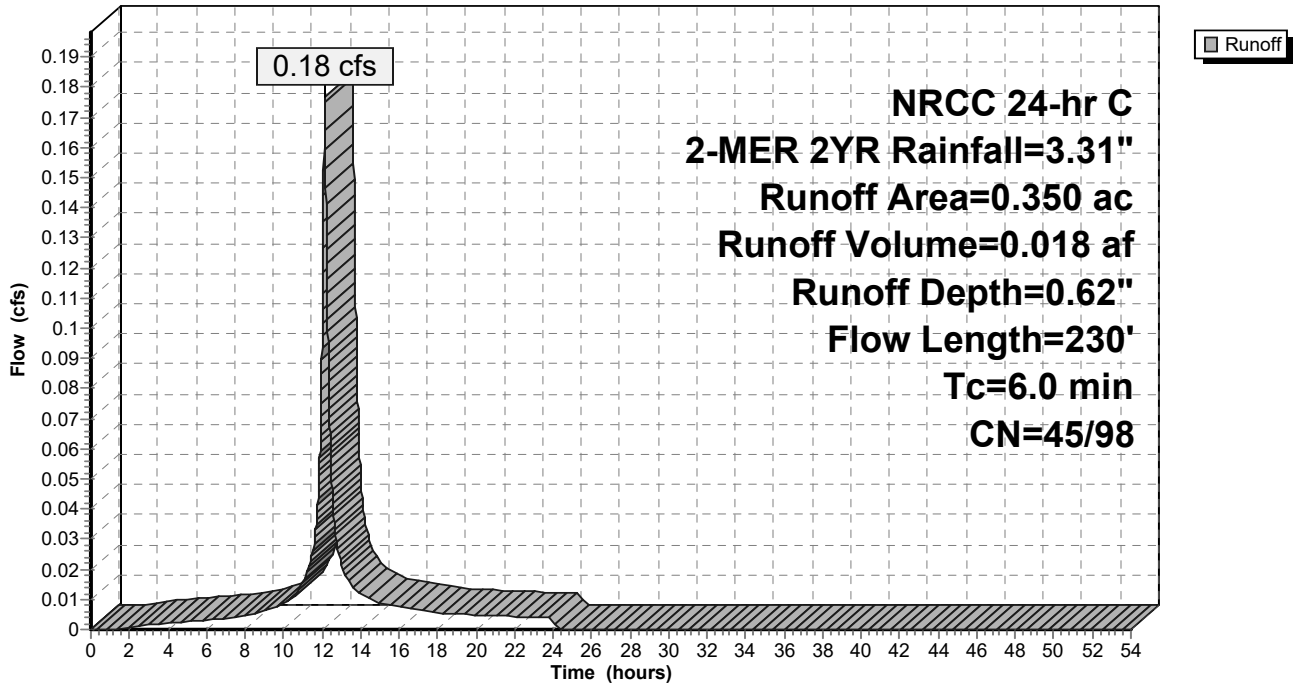
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 2-MER 2YR Rainfall=3.31"

Area (ac)	CN	Description
0.021	98	Roofs, HSG B
0.024	96	Gravel surface, HSG B
0.049	58	Woods/grass comb., Good, HSG B
0.044	98	Roofs, HSG A
0.016	96	Gravel surface, HSG A
0.196	32	Woods/grass comb., Good, HSG A
0.350	55	Weighted Average
0.285	45	81.43% Pervious Area
0.065	98	18.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	230		0.64		Direct Entry,

**Subcatchment EC-1: EC-1**

Hydrograph



**Summary for Subcatchment EC-2: EC-2**

Runoff = 0.11 cfs @ 12.15 hrs, Volume= 0.010 af, Depth= 0.89"

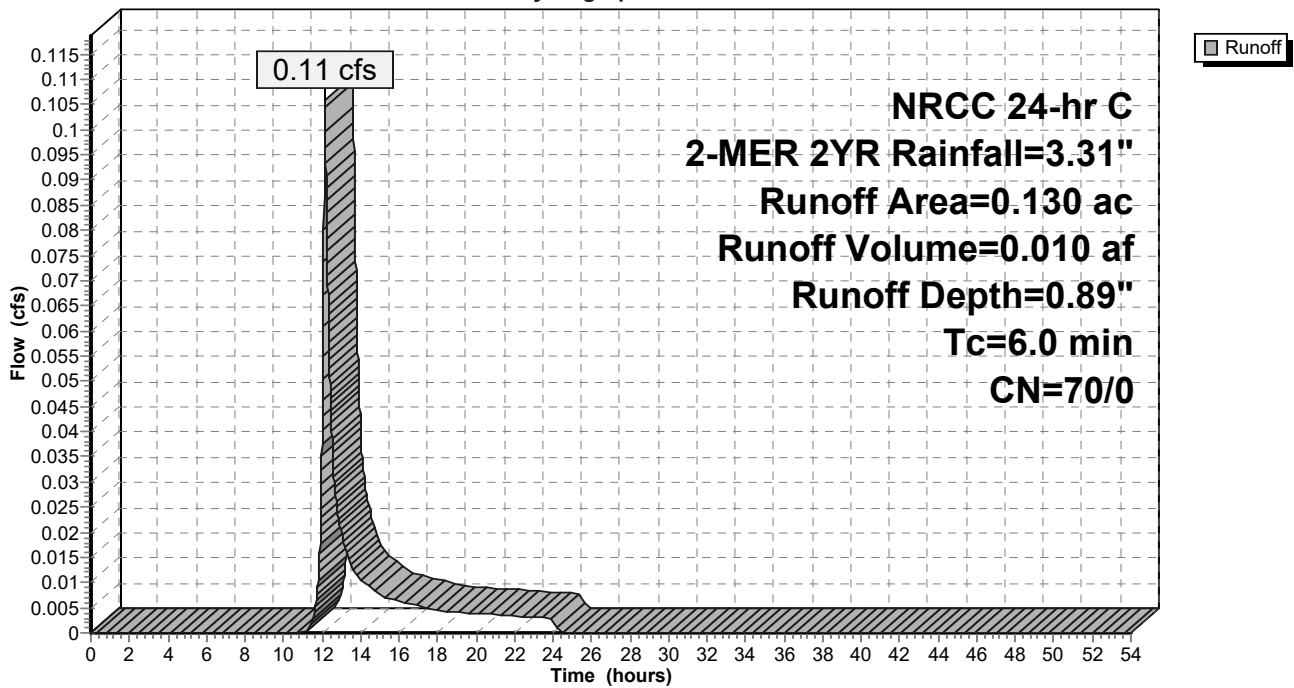
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 2-MER 2YR Rainfall=3.31"

Area (ac)	CN	Description
0.059	96	Gravel surface, HSG B
0.071	48	Brush, Good, HSG B
0.130	70	Weighted Average
0.130	70	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EC-2: EC-2**

Hydrograph



**Summary for Subcatchment EC-3-ROW: EC-3-ROW**

Runoff = 0.11 cfs @ 12.14 hrs, Volume= 0.011 af, Depth= 1.81"

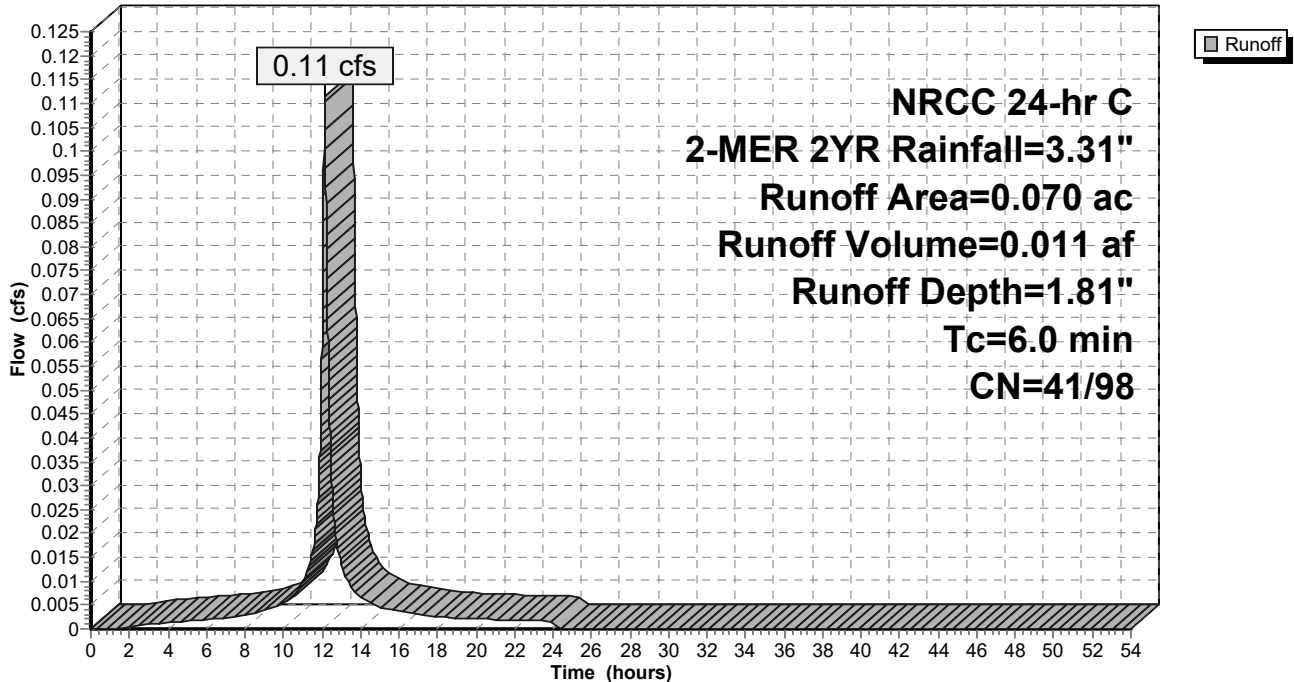
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 2-MER 2YR Rainfall=3.31"

Area (ac)	CN	Description
0.011	48	Brush, Good, HSG B
0.016	30	Woods, Good, HSG A
0.002	96	Gravel surface, HSG A
0.021	98	Paved roads w/curbs & sewers, HSG B
0.020	98	Paved roads w/curbs & sewers, HSG A
0.070	75	Weighted Average
0.029	41	41.43% Pervious Area
0.041	98	58.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EC-3-ROW: EC-3-ROW**

Hydrograph



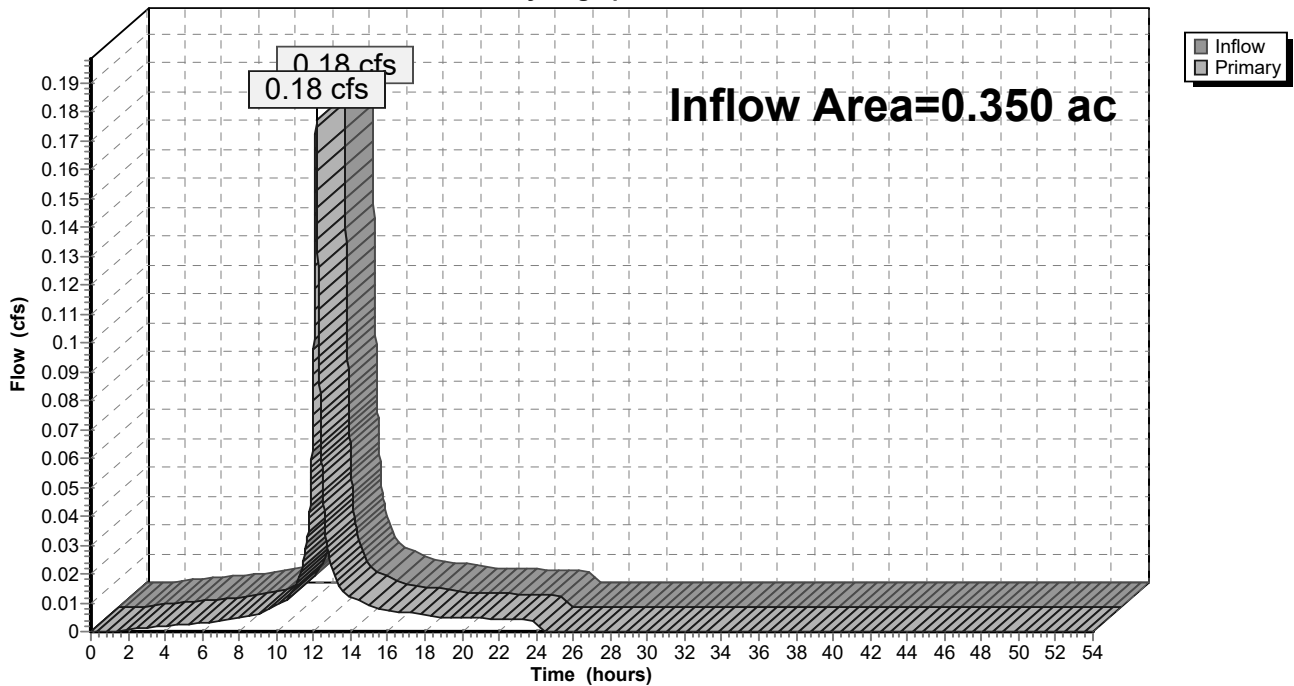
### Summary for Link POA-C1: POA-C1 (ROCKY BROOK)

Inflow Area = 0.350 ac, 18.57% Impervious, Inflow Depth = 0.62" for 2-MER 2YR event  
Inflow = 0.18 cfs @ 12.14 hrs, Volume= 0.018 af  
Primary = 0.18 cfs @ 12.14 hrs, Volume= 0.018 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-C1: POA-C1 (ROCKY BROOK)

Hydrograph



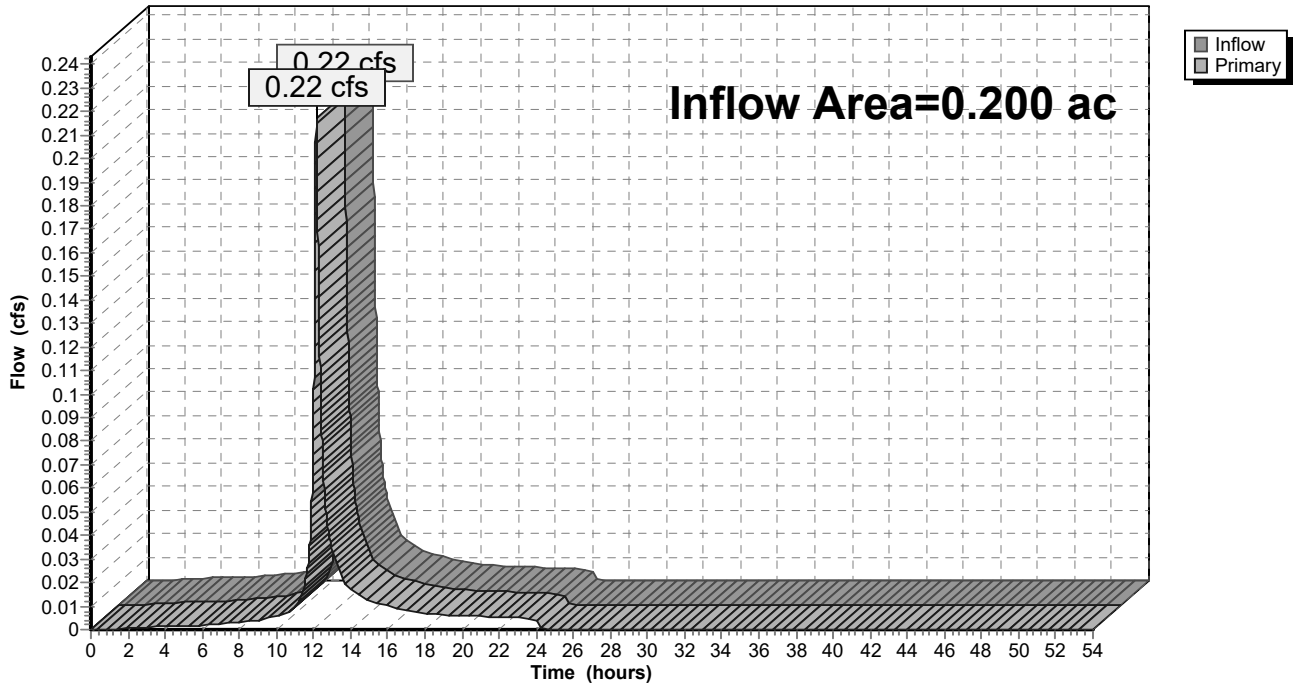
### Summary for Link POA-C2: POA-C2 (BANK STREET)

Inflow Area = 0.200 ac, 20.50% Impervious, Inflow Depth = 1.21" for 2-MER 2YR event  
Inflow = 0.22 cfs @ 12.14 hrs, Volume= 0.020 af  
Primary = 0.22 cfs @ 12.14 hrs, Volume= 0.020 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-C2: POA-C2 (BANK STREET)

Hydrograph



**200811\_Model**

NRCC 24-hr C 3-MER 10YR Rainfall=5.02"

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Time span=0.00-54.00 hrs, dt=0.01 hrs, 5401 points  
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious  
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment EC-1: EC-1**

Runoff Area=0.350 ac 18.57% Impervious Runoff Depth=1.25"  
Flow Length=230' Tc=6.0 min CN=45/98 Runoff=0.31 cfs 0.037 af

**Subcatchment EC-2: EC-2**

Runoff Area=0.130 ac 0.00% Impervious Runoff Depth=2.05"  
Tc=6.0 min CN=70/0 Runoff=0.26 cfs 0.022 af

**Subcatchment EC-3-ROW: EC-3-ROW**

Runoff Area=0.070 ac 58.57% Impervious Runoff Depth=2.92"  
Tc=6.0 min CN=41/98 Runoff=0.17 cfs 0.017 af

**Link POA-C1: POA-C1 (ROCKY BROOK)**

Inflow=0.31 cfs 0.037 af  
Primary=0.31 cfs 0.037 af

**Link POA-C2: POA-C2 (BANK STREET)**

Inflow=0.43 cfs 0.039 af  
Primary=0.43 cfs 0.039 af

**Total Runoff Area = 0.550 ac Runoff Volume = 0.076 af Average Runoff Depth = 1.65"**  
**80.73% Pervious = 0.444 ac 19.27% Impervious = 0.106 ac**



**Summary for Subcatchment EC-1: EC-1**

Runoff = 0.31 cfs @ 12.15 hrs, Volume= 0.037 af, Depth= 1.25"

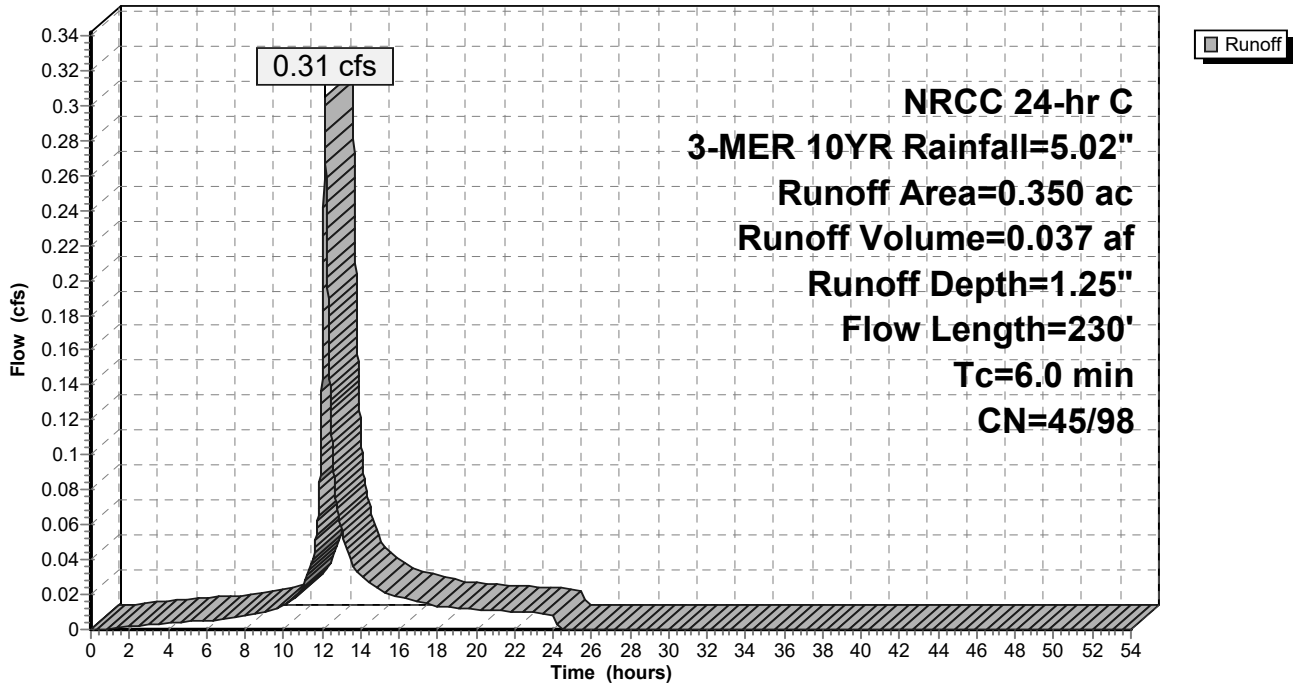
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 3-MER 10YR Rainfall=5.02"

Area (ac)	CN	Description
0.021	98	Roofs, HSG B
0.024	96	Gravel surface, HSG B
0.049	58	Woods/grass comb., Good, HSG B
0.044	98	Roofs, HSG A
0.016	96	Gravel surface, HSG A
0.196	32	Woods/grass comb., Good, HSG A
<hr/>		
0.350	55	Weighted Average
0.285	45	81.43% Pervious Area
0.065	98	18.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	230		0.64		Direct Entry,

**Subcatchment EC-1: EC-1**

Hydrograph



**Summary for Subcatchment EC-2: EC-2**

Runoff = 0.26 cfs @ 12.15 hrs, Volume= 0.022 af, Depth= 2.05"

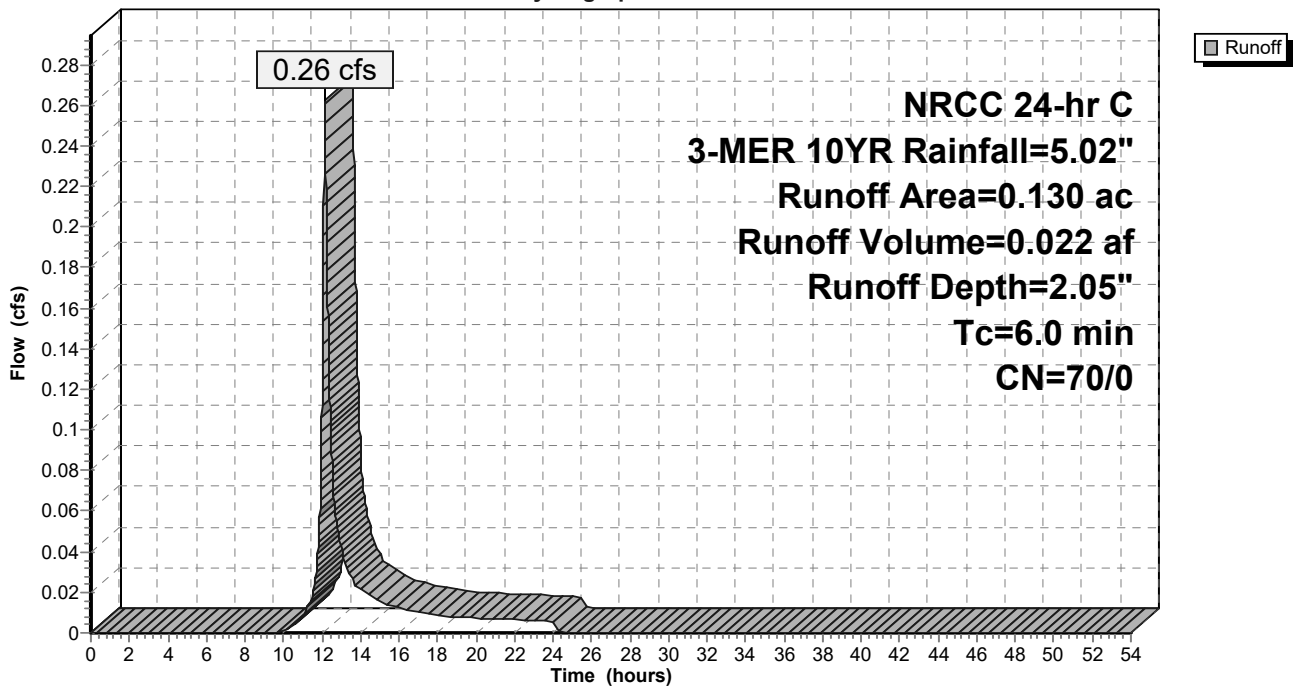
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 3-MER 10YR Rainfall=5.02"

Area (ac)	CN	Description
0.059	96	Gravel surface, HSG B
0.071	48	Brush, Good, HSG B
0.130	70	Weighted Average
0.130	70	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EC-2: EC-2**

Hydrograph



**Summary for Subcatchment EC-3-ROW: EC-3-ROW**

Runoff = 0.17 cfs @ 12.14 hrs, Volume= 0.017 af, Depth= 2.92"

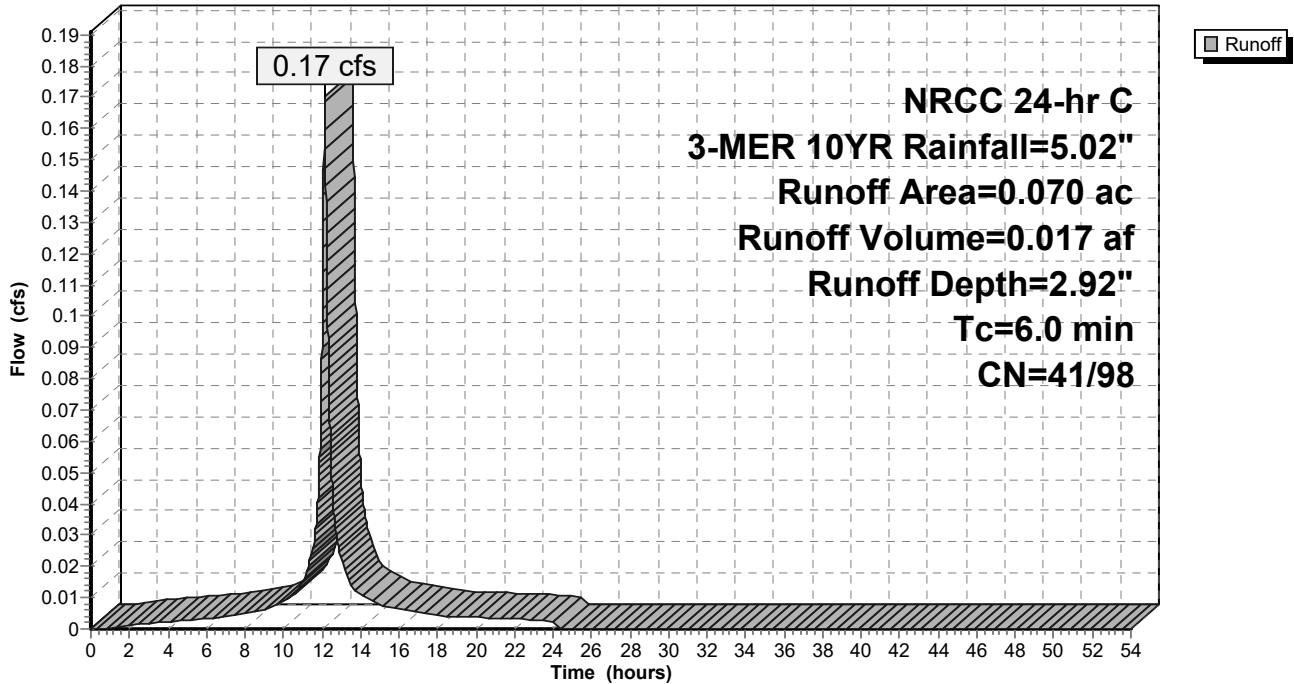
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 3-MER 10YR Rainfall=5.02"

Area (ac)	CN	Description
0.011	48	Brush, Good, HSG B
0.016	30	Woods, Good, HSG A
0.002	96	Gravel surface, HSG A
0.021	98	Paved roads w/curbs & sewers, HSG B
0.020	98	Paved roads w/curbs & sewers, HSG A
0.070	75	Weighted Average
0.029	41	41.43% Pervious Area
0.041	98	58.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EC-3-ROW: EC-3-ROW**

Hydrograph



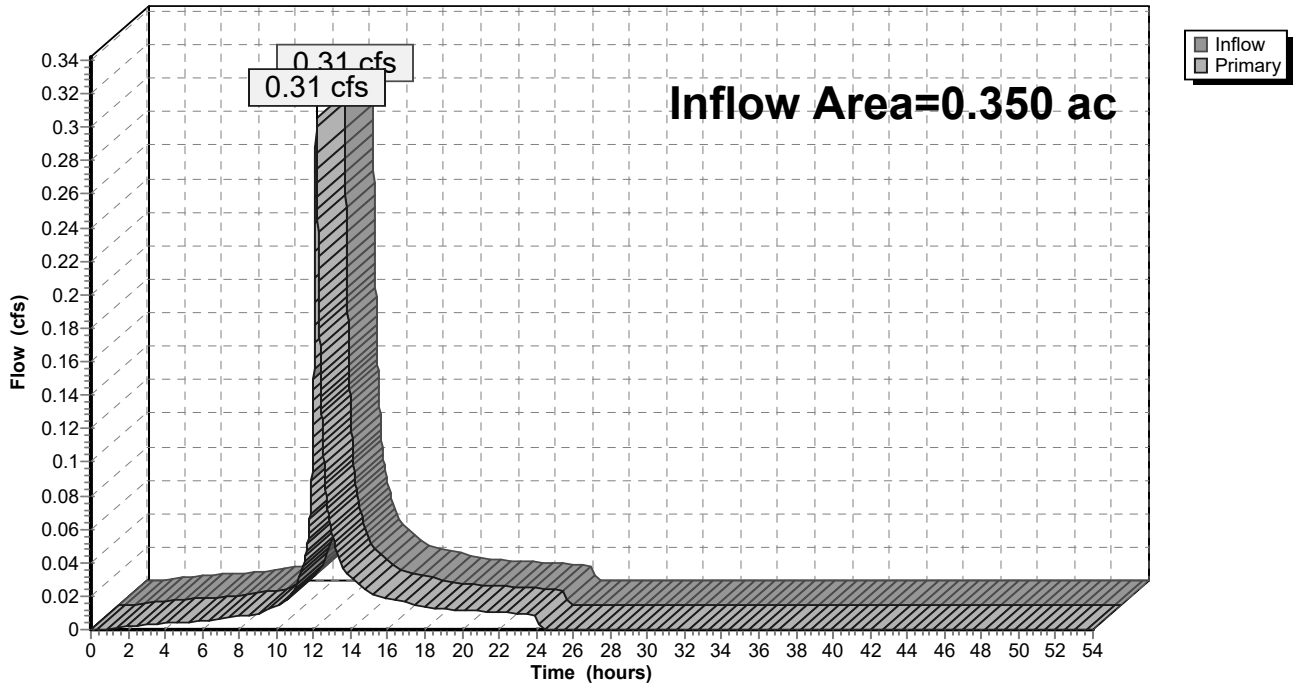
### Summary for Link POA-C1: POA-C1 (ROCKY BROOK)

Inflow Area = 0.350 ac, 18.57% Impervious, Inflow Depth = 1.25" for 3-MER 10YR event  
Inflow = 0.31 cfs @ 12.15 hrs, Volume= 0.037 af  
Primary = 0.31 cfs @ 12.15 hrs, Volume= 0.037 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-C1: POA-C1 (ROCKY BROOK)

Hydrograph



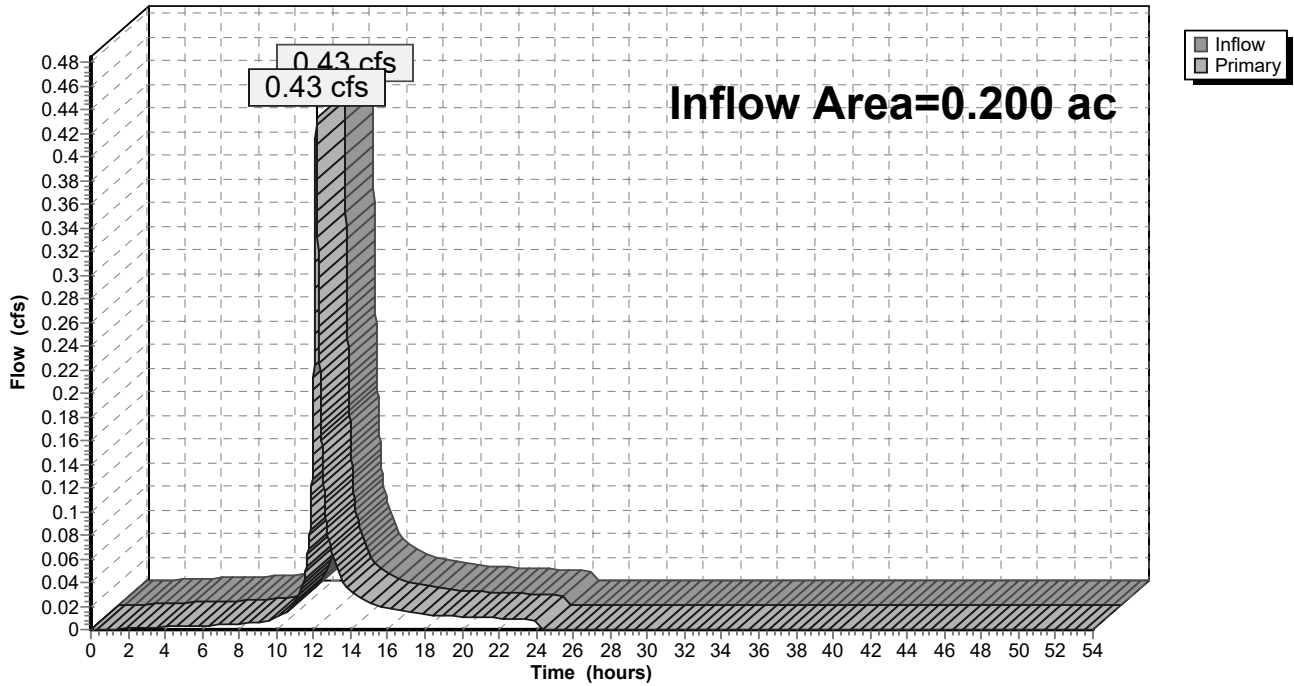
### Summary for Link POA-C2: POA-C2 (BANK STREET)

Inflow Area = 0.200 ac, 20.50% Impervious, Inflow Depth = 2.35" for 3-MER 10YR event  
Inflow = 0.43 cfs @ 12.14 hrs, Volume= 0.039 af  
Primary = 0.43 cfs @ 12.14 hrs, Volume= 0.039 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-C2: POA-C2 (BANK STREET)

Hydrograph



**200811\_Model**

NRCC 24-hr C 4-MER 25YR Rainfall=6.20"

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Time span=0.00-54.00 hrs, dt=0.01 hrs, 5401 points  
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious  
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment EC-1: EC-1**

Runoff Area=0.350 ac 18.57% Impervious Runoff Depth=1.83"  
Flow Length=230' Tc=6.0 min CN=45/98 Runoff=0.49 cfs 0.053 af

**Subcatchment EC-2: EC-2**

Runoff Area=0.130 ac 0.00% Impervious Runoff Depth=2.96"  
Tc=6.0 min CN=70/0 Runoff=0.38 cfs 0.032 af

**Subcatchment EC-3-ROW: EC-3-ROW**

Runoff Area=0.070 ac 58.57% Impervious Runoff Depth=3.75"  
Tc=6.0 min CN=41/98 Runoff=0.22 cfs 0.022 af

**Link POA-C1: POA-C1 (ROCKY BROOK)**

Inflow=0.49 cfs 0.053 af  
Primary=0.49 cfs 0.053 af

**Link POA-C2: POA-C2 (BANK STREET)**

Inflow=0.60 cfs 0.054 af  
Primary=0.60 cfs 0.054 af

**Total Runoff Area = 0.550 ac Runoff Volume = 0.107 af Average Runoff Depth = 2.34"**  
**80.73% Pervious = 0.444 ac 19.27% Impervious = 0.106 ac**

**Summary for Subcatchment EC-1: EC-1**

Runoff = 0.49 cfs @ 12.15 hrs, Volume= 0.053 af, Depth= 1.83"

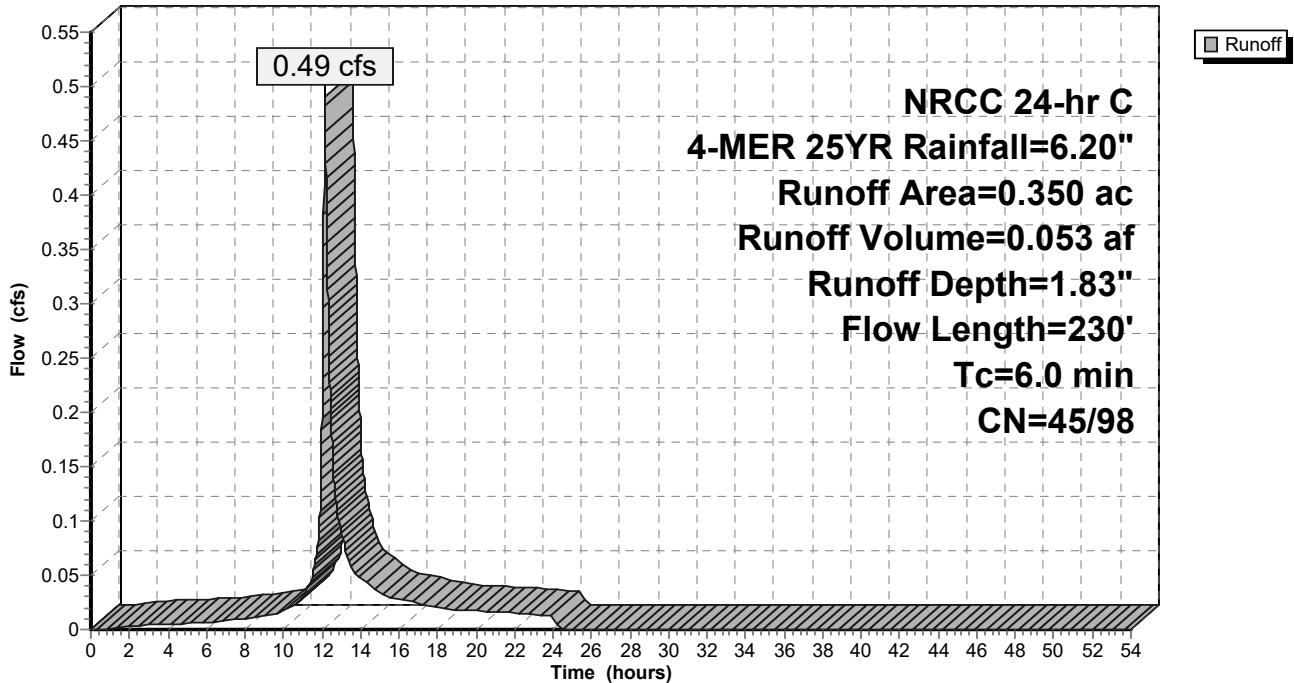
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 4-MER 25YR Rainfall=6.20"

Area (ac)	CN	Description
0.021	98	Roofs, HSG B
0.024	96	Gravel surface, HSG B
0.049	58	Woods/grass comb., Good, HSG B
0.044	98	Roofs, HSG A
0.016	96	Gravel surface, HSG A
0.196	32	Woods/grass comb., Good, HSG A
0.350	55	Weighted Average
0.285	45	81.43% Pervious Area
0.065	98	18.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	230		0.64		Direct Entry,

**Subcatchment EC-1: EC-1**

Hydrograph



**Summary for Subcatchment EC-2: EC-2**

Runoff = 0.38 cfs @ 12.14 hrs, Volume= 0.032 af, Depth= 2.96"

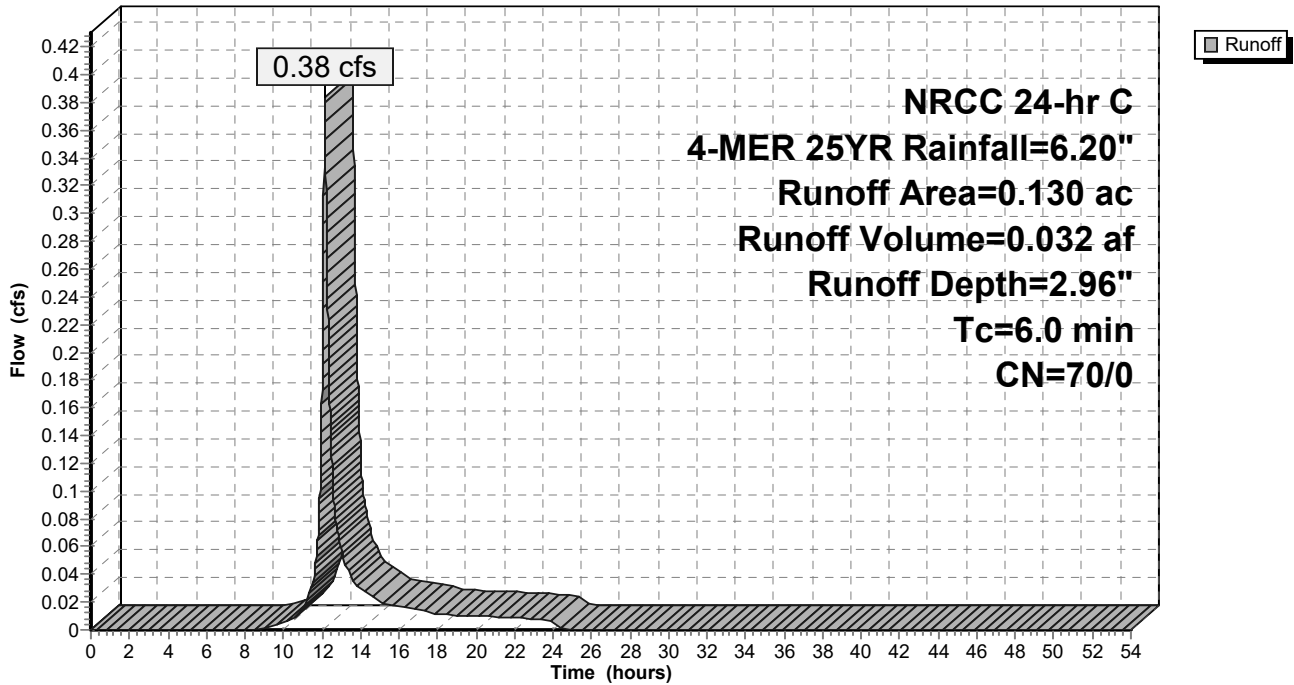
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 4-MER 25YR Rainfall=6.20"

Area (ac)	CN	Description
0.059	96	Gravel surface, HSG B
0.071	48	Brush, Good, HSG B
0.130	70	Weighted Average
0.130	70	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EC-2: EC-2**

Hydrograph





**Summary for Subcatchment EC-3-ROW: EC-3-ROW**

Runoff = 0.22 cfs @ 12.14 hrs, Volume= 0.022 af, Depth= 3.75"

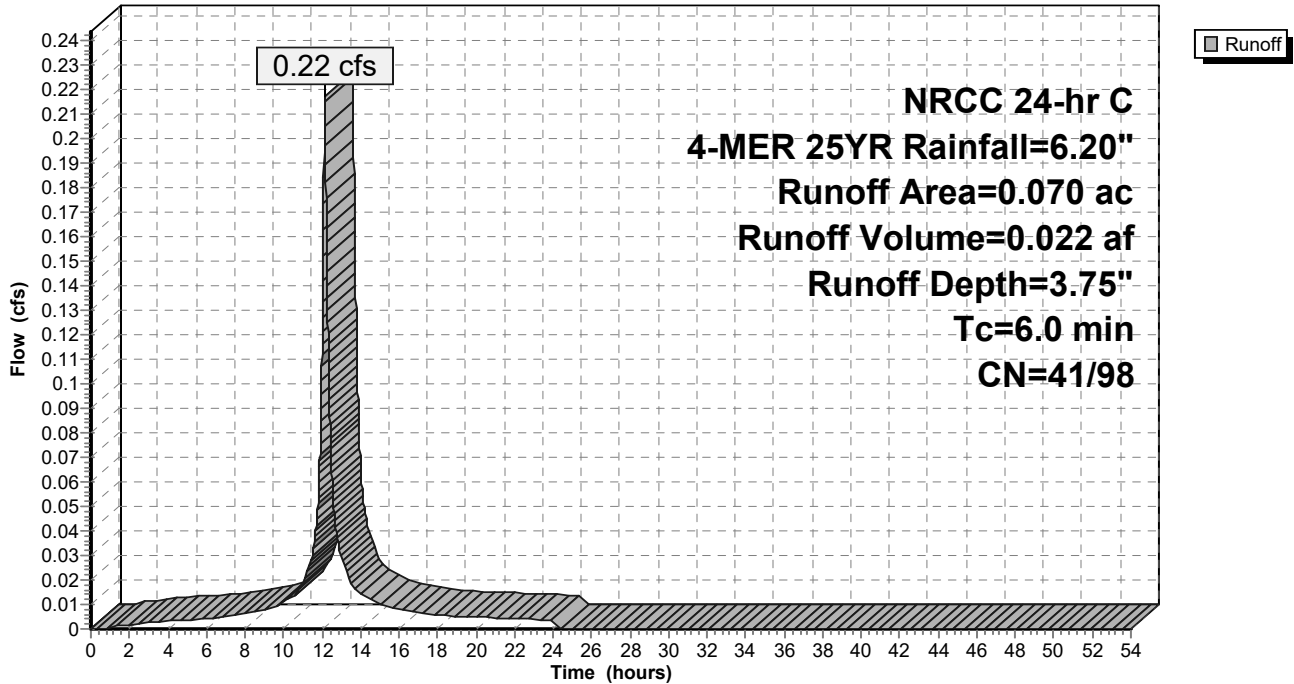
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 4-MER 25YR Rainfall=6.20"

Area (ac)	CN	Description
0.011	48	Brush, Good, HSG B
0.016	30	Woods, Good, HSG A
0.002	96	Gravel surface, HSG A
0.021	98	Paved roads w/curbs & sewers, HSG B
0.020	98	Paved roads w/curbs & sewers, HSG A
0.070	75	Weighted Average
0.029	41	41.43% Pervious Area
0.041	98	58.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EC-3-ROW: EC-3-ROW**

Hydrograph



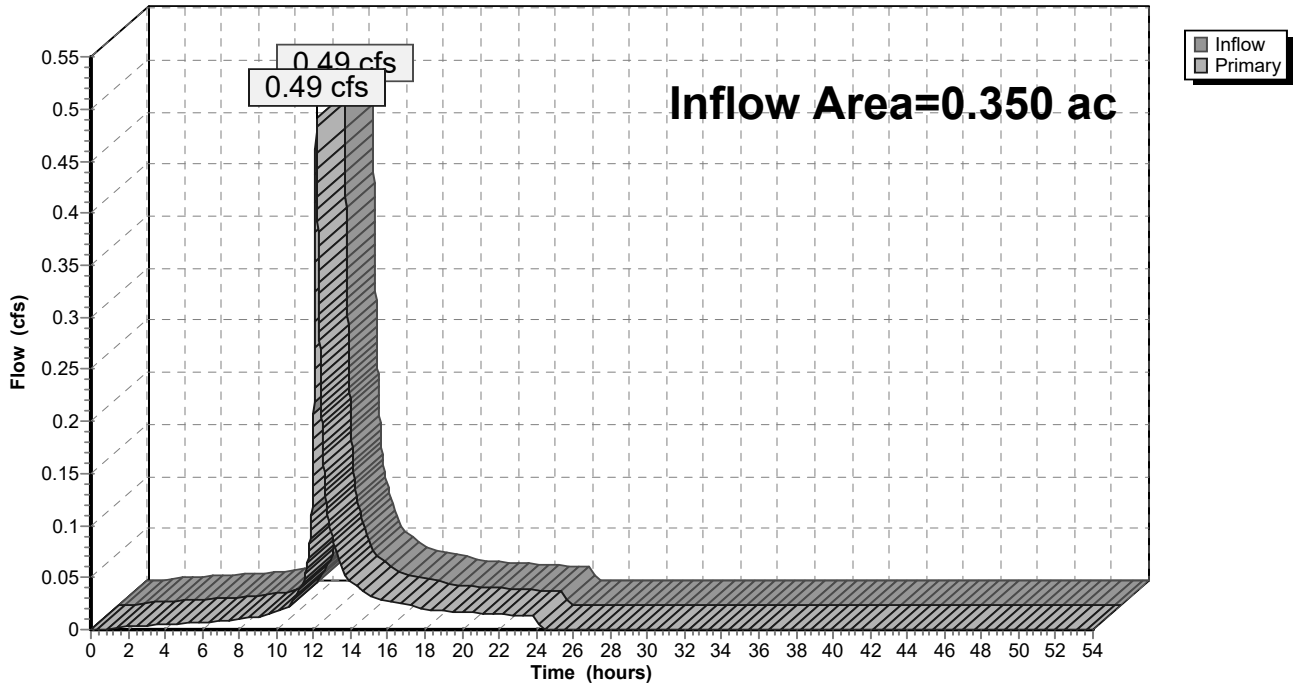
### Summary for Link POA-C1: POA-C1 (ROCKY BROOK)

Inflow Area = 0.350 ac, 18.57% Impervious, Inflow Depth = 1.83" for 4-MER 25YR event  
Inflow = 0.49 cfs @ 12.15 hrs, Volume= 0.053 af  
Primary = 0.49 cfs @ 12.15 hrs, Volume= 0.053 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-C1: POA-C1 (ROCKY BROOK)

Hydrograph



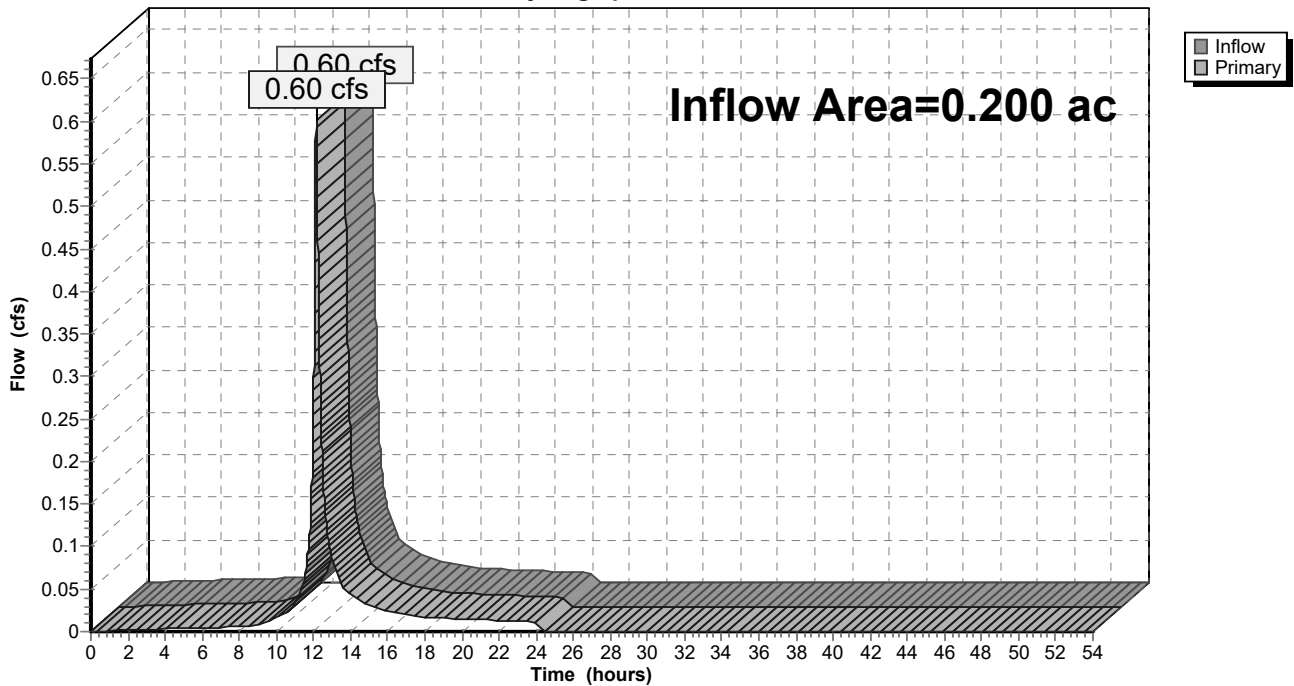
### Summary for Link POA-C2: POA-C2 (BANK STREET)

Inflow Area = 0.200 ac, 20.50% Impervious, Inflow Depth = 3.24" for 4-MER 25YR event  
Inflow = 0.60 cfs @ 12.14 hrs, Volume= 0.054 af  
Primary = 0.60 cfs @ 12.14 hrs, Volume= 0.054 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-C2: POA-C2 (BANK STREET)

Hydrograph



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NRCC 24-hr C 5-MER 100YR Rainfall=8.35"

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Time span=0.00-54.00 hrs, dt=0.01 hrs, 5401 points  
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious  
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment EC-1: EC-1** Runoff Area=0.350 ac 18.57% Impervious Runoff Depth=3.07"  
Flow Length=230' Tc=6.0 min CN=45/98 Runoff=0.92 cfs 0.090 af

**Subcatchment EC-2: EC-2** Runoff Area=0.130 ac 0.00% Impervious Runoff Depth=4.77"  
Tc=6.0 min CN=70/0 Runoff=0.62 cfs 0.052 af

**Subcatchment EC-3-ROW: EC-3-ROW** Runoff Area=0.070 ac 58.57% Impervious Runoff Depth=5.37"  
Tc=6.0 min CN=41/98 Runoff=0.32 cfs 0.031 af

**Link POA-C1: POA-C1 (ROCKY BROOK)** Inflow=0.92 cfs 0.090 af  
Primary=0.92 cfs 0.090 af

**Link POA-C2: POA-C2 (BANK STREET)** Inflow=0.94 cfs 0.083 af  
Primary=0.94 cfs 0.083 af

**Total Runoff Area = 0.550 ac Runoff Volume = 0.173 af Average Runoff Depth = 3.77"**  
**80.73% Pervious = 0.444 ac 19.27% Impervious = 0.106 ac**

**Summary for Subcatchment EC-1: EC-1**

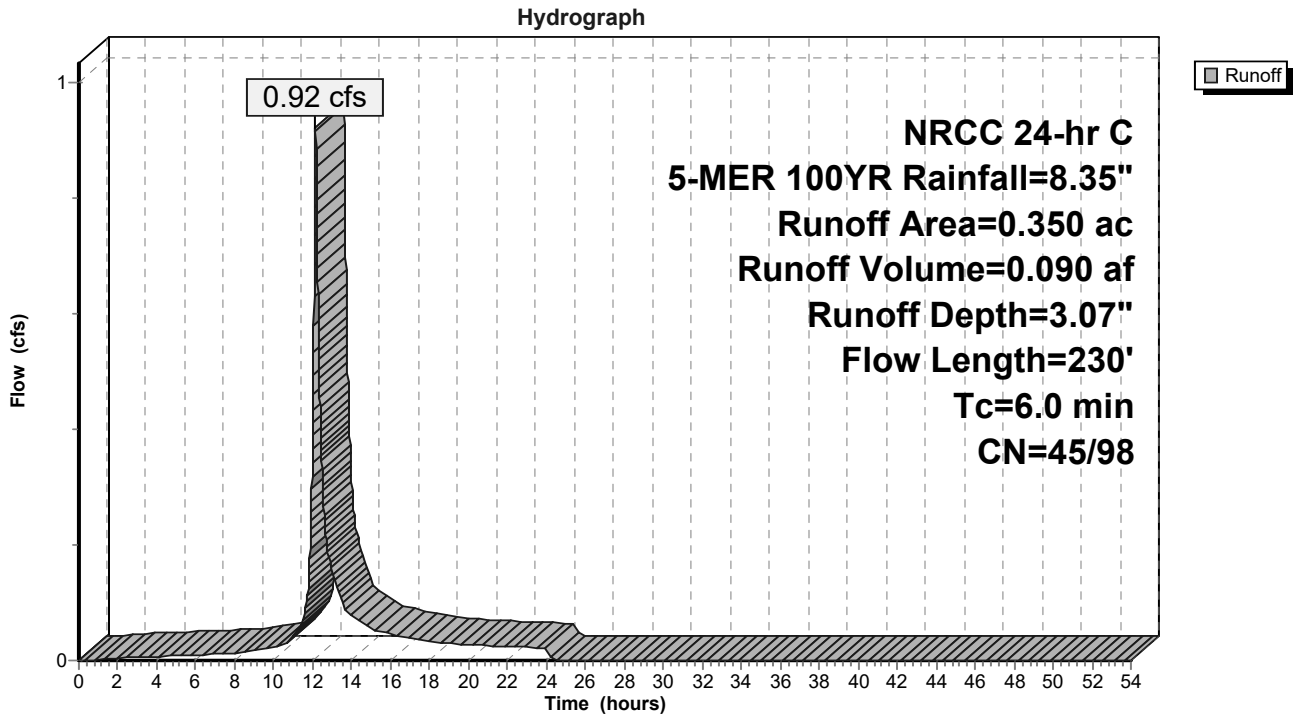
Runoff = 0.92 cfs @ 12.15 hrs, Volume= 0.090 af, Depth= 3.07"

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 5-MER 100YR Rainfall=8.35"

Area (ac)	CN	Description
0.021	98	Roofs, HSG B
0.024	96	Gravel surface, HSG B
0.049	58	Woods/grass comb., Good, HSG B
0.044	98	Roofs, HSG A
0.016	96	Gravel surface, HSG A
0.196	32	Woods/grass comb., Good, HSG A
<hr/>		
0.350	55	Weighted Average
0.285	45	81.43% Pervious Area
0.065	98	18.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	230		0.64		Direct Entry,

**Subcatchment EC-1: EC-1**



**Summary for Subcatchment EC-2: EC-2**

Runoff = 0.62 cfs @ 12.14 hrs, Volume= 0.052 af, Depth= 4.77"

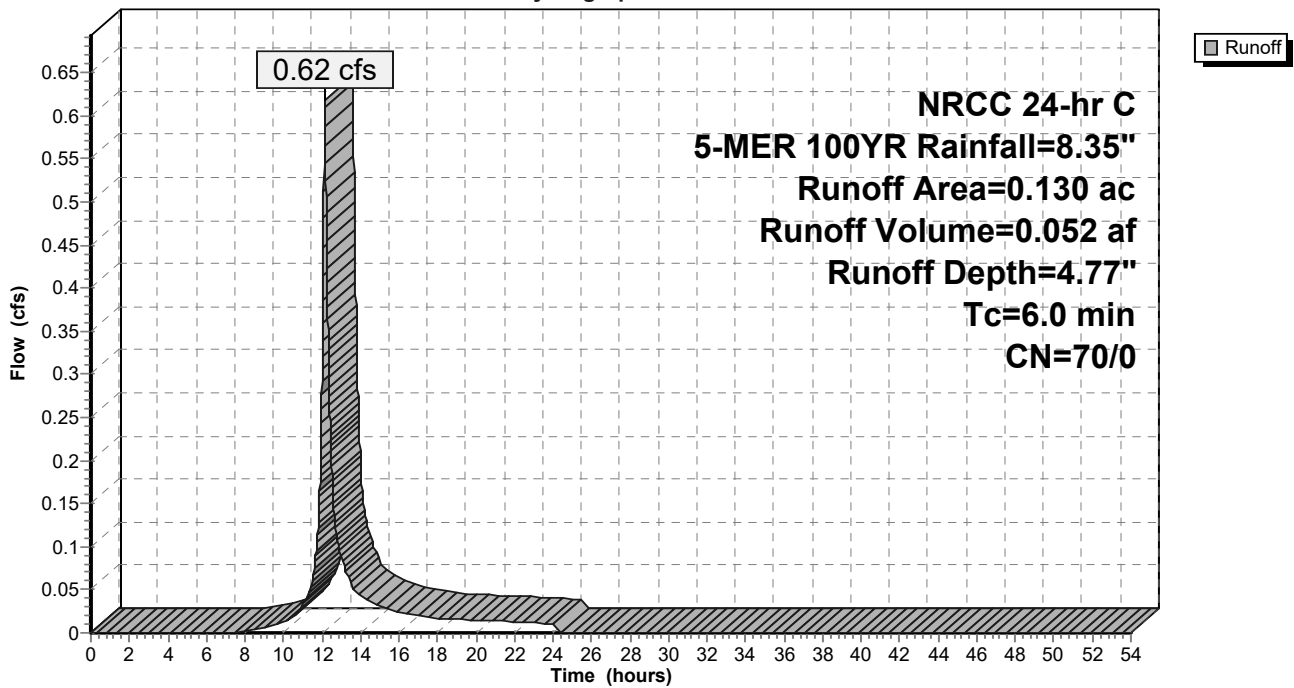
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 5-MER 100YR Rainfall=8.35"

Area (ac)	CN	Description
0.059	96	Gravel surface, HSG B
0.071	48	Brush, Good, HSG B
0.130	70	Weighted Average
0.130	70	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EC-2: EC-2**

Hydrograph



**Summary for Subcatchment EC-3-ROW: EC-3-ROW**

Runoff = 0.32 cfs @ 12.14 hrs, Volume= 0.031 af, Depth= 5.37"

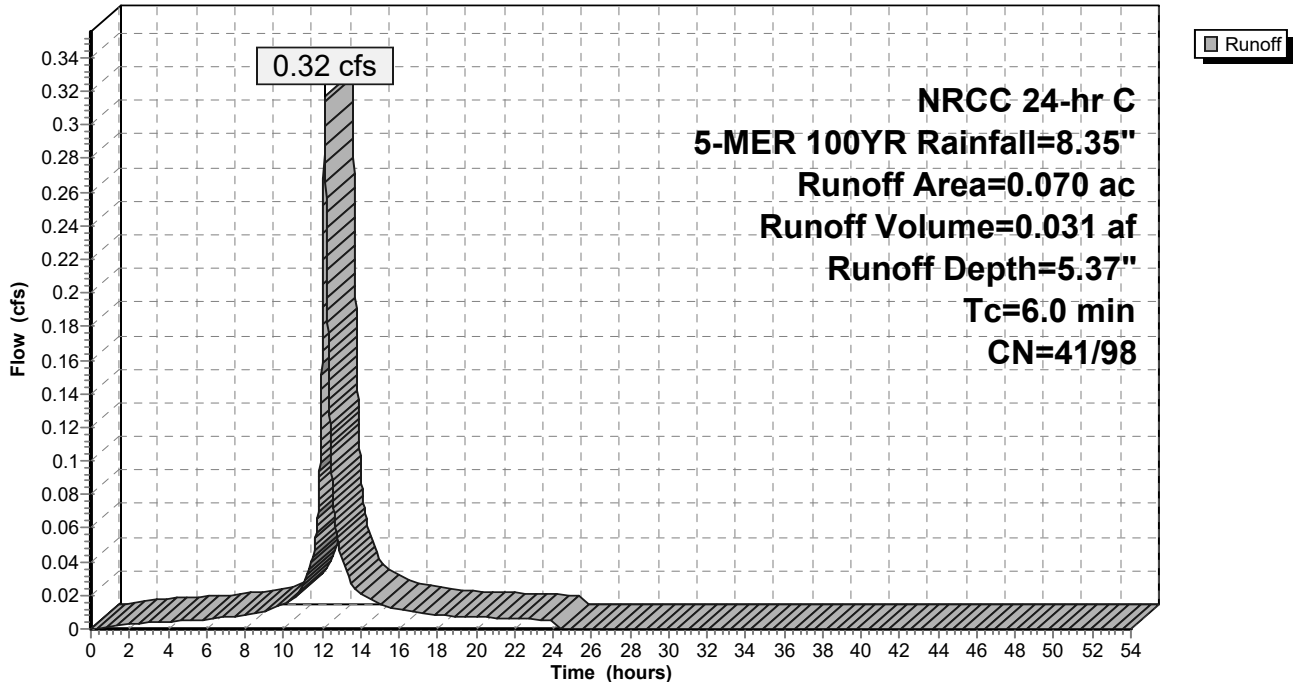
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 5-MER 100YR Rainfall=8.35"

Area (ac)	CN	Description
0.011	48	Brush, Good, HSG B
0.016	30	Woods, Good, HSG A
0.002	96	Gravel surface, HSG A
0.021	98	Paved roads w/curbs & sewers, HSG B
0.020	98	Paved roads w/curbs & sewers, HSG A
0.070	75	Weighted Average
0.029	41	41.43% Pervious Area
0.041	98	58.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EC-3-ROW: EC-3-ROW**

Hydrograph

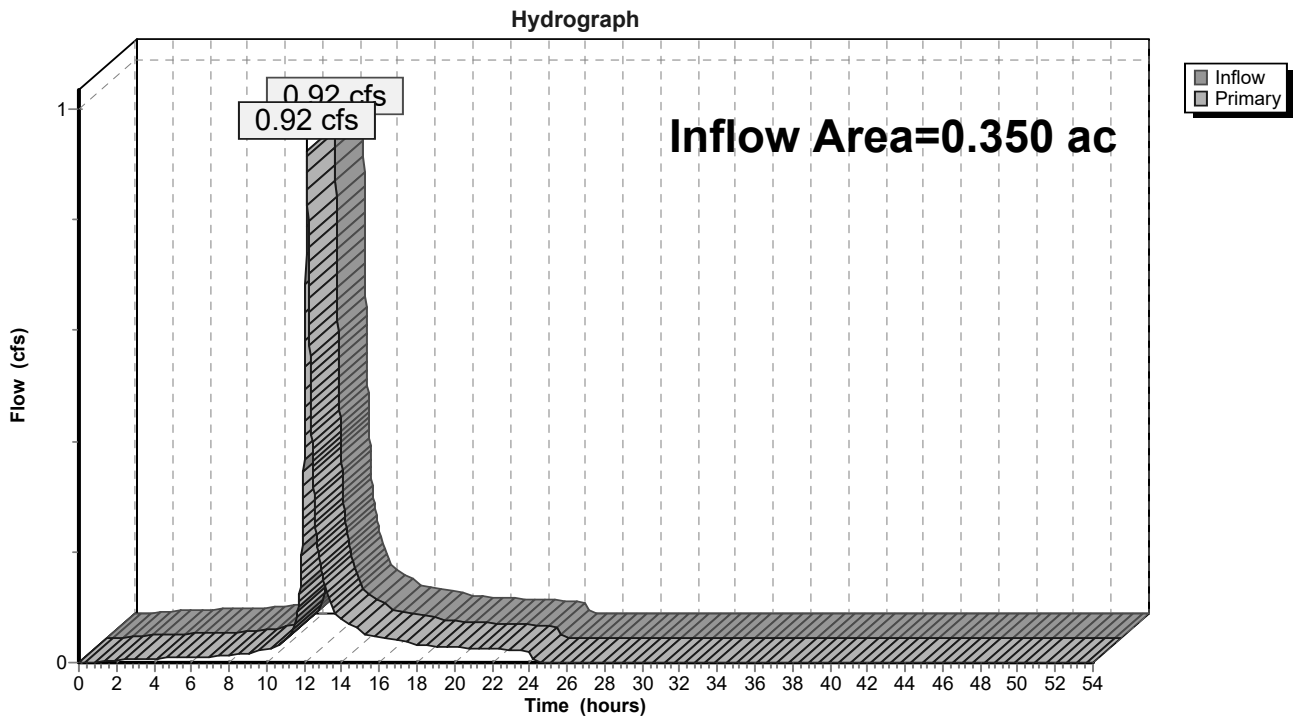


### Summary for Link POA-C1: POA-C1 (ROCKY BROOK)

Inflow Area = 0.350 ac, 18.57% Impervious, Inflow Depth = 3.07" for 5-MER 100YR event  
Inflow = 0.92 cfs @ 12.15 hrs, Volume= 0.090 af  
Primary = 0.92 cfs @ 12.15 hrs, Volume= 0.090 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-C1: POA-C1 (ROCKY BROOK)



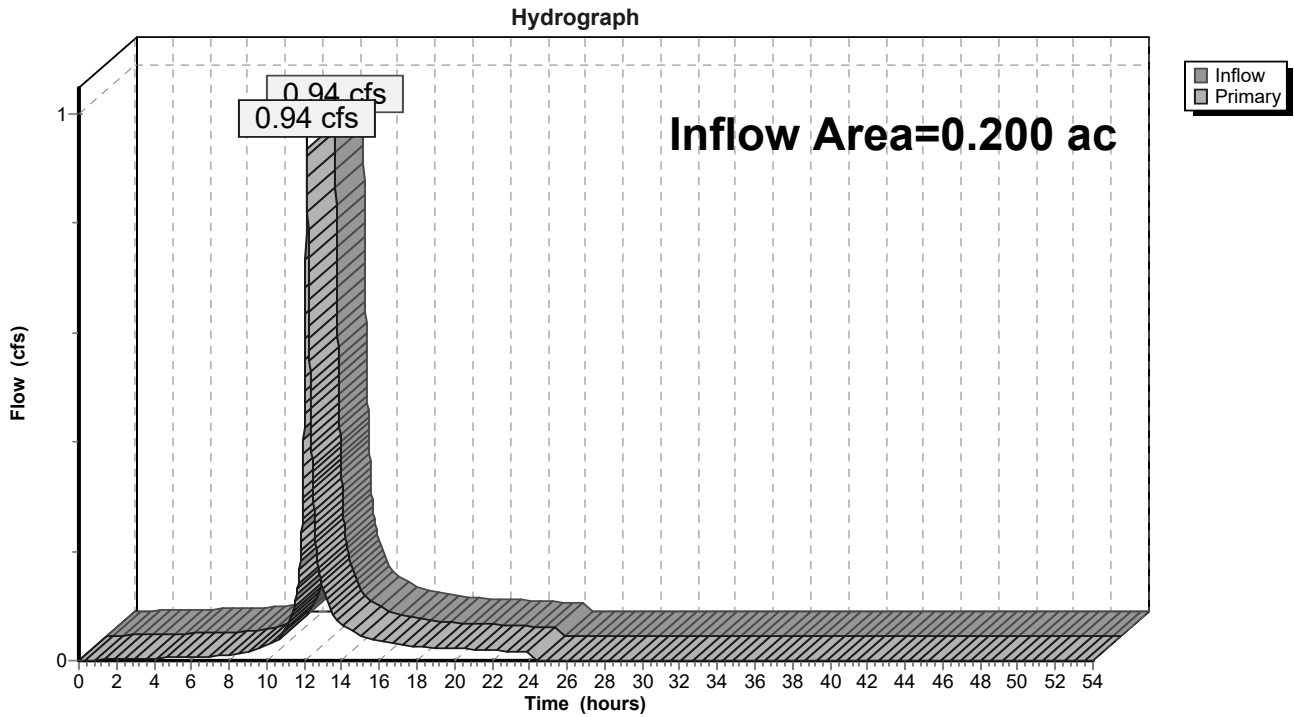


### Summary for Link POA-C2: POA-C2 (BANK STREET)

Inflow Area = 0.200 ac, 20.50% Impervious, Inflow Depth = 4.98" for 5-MER 100YR event  
Inflow = 0.94 cfs @ 12.14 hrs, Volume= 0.083 af  
Primary = 0.94 cfs @ 12.14 hrs, Volume= 0.083 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-C2: POA-C2 (BANK STREET)



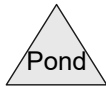
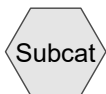
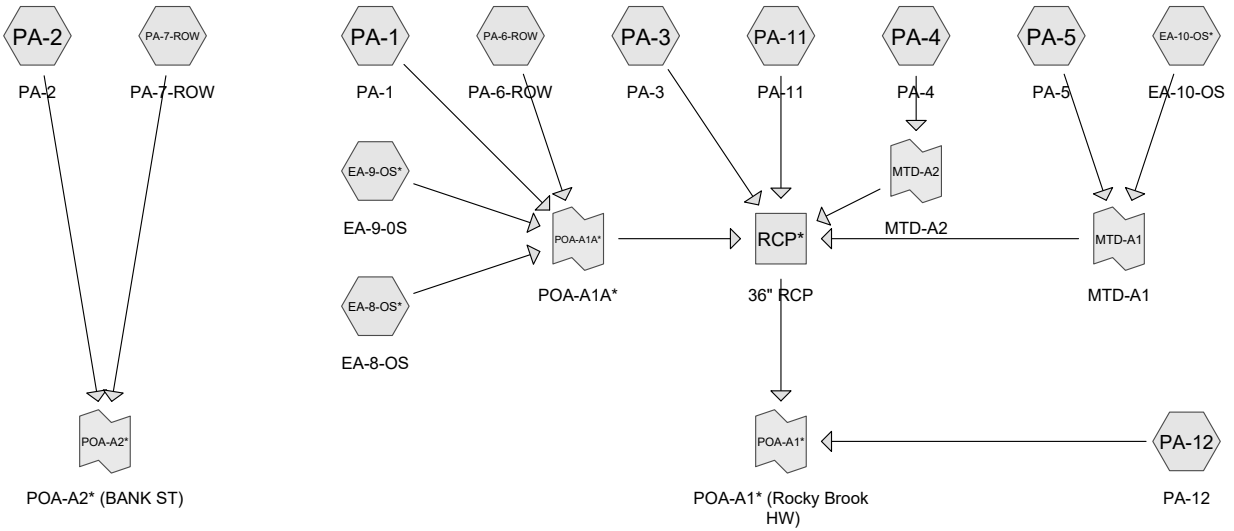


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## **APPENDIX C**

### **PROPOSED CONDITIONS ANALYSIS**

**TRACT A PROPOSED**



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### **Project Notes**

Rainfall events imported from "200330\_Analysis.hcp"

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### Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-MER 1YR	NRCC 24-hr	C	Default	24.00	1	2.74	2
2	2-MER 2YR	NRCC 24-hr	C	Default	24.00	1	3.31	2
3	3-MER 10YR	NRCC 24-hr	C	Default	24.00	1	5.02	2
4	4-MER 25YR	NRCC 24-hr	C	Default	24.00	1	6.20	2
5	5-MER 100YR	NRCC 24-hr	C	Default	24.00	1	8.35	2
6	NJDEP WQ	NJ DEP 2-hr		Default	2.00	1	1.25	2

**Area Listing (selected nodes)**

Area (acres)	CN	Description (subcatchment-numbers)
46.420	72	1/3 acre lots, 30% imp, HSG B (EA-8-OS*)
0.123	39	>75% Grass cover, Good, HSG A (PA-1, PA-11)
1.199	61	>75% Grass cover, Good, HSG B (EA-9-OS*, PA-1, PA-11, PA-12, PA-2, PA-4, PA-5, PA-6-ROW, PA-7-ROW)
0.500	74	>75% Grass cover, Good, HSG C (EA-10-OS*, PA-11, PA-3, PA-4, PA-5)
0.839	80	>75% Grass cover, Good, HSG D (EA-9-OS*, PA-12)
0.210	73	Brush, Good, HSG D (EA-9-OS*)
0.519	98	Paved parking, HSG A (PA-4, PA-6-ROW, PA-7-ROW)
0.738	98	Paved parking, HSG B (PA-4, PA-5)
0.639	98	Paved parking, HSG C (PA-4, PA-5)
0.006	98	Paved parking, HSG D (PA-12)
0.369	98	Roofs, HSG A (PA-11, PA-3)
0.193	98	Roofs, HSG B (PA-11)
0.761	98	Roofs, HSG C (EA-10-OS*, EA-9-OS*, PA-3)
0.020	98	Sidewalks HSG C (PA-3)
0.087	98	Sidewalks, HSG A (PA-1, PA-11, PA-2, PA-4)
0.038	98	Sidewalks, HSG B (PA-1, PA-11, PA-2, PA-5)
0.079	98	Sidewalks, HSG C (PA-4)
0.210	98	Unconnected pavement, HSG C (EA-10-OS*, EA-9-OS*)
0.280	98	Unconnected roofs, HSG C (PA-3)
0.270	58	Woods/grass comb., Good, HSG B (EA-9-OS*)
0.040	72	Woods/grass comb., Good, HSG C (EA-10-OS*)
0.050	79	Woods/grass comb., Good, HSG D (EA-9-OS*)
<b>53.590</b>	<b>74</b>	<b>TOTAL AREA</b>

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**Soil Listing (selected nodes)**

Area (acres)	Soil Group	Subcatchment Numbers
1.098	HSG A	PA-1, PA-11, PA-2, PA-3, PA-4, PA-6-ROW, PA-7-ROW
48.858	HSG B	EA-8-OS*, EA-9-OS*, PA-1, PA-11, PA-12, PA-2, PA-4, PA-5, PA-6-ROW, PA-7-ROW
2.529	HSG C	EA-10-OS*, EA-9-OS*, PA-11, PA-3, PA-4, PA-5
1.105	HSG D	EA-9-OS*, PA-12
0.000	Other	
<b>53.590</b>		<b>TOTAL AREA</b>

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**Ground Covers (selected nodes)**

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	46.420	0.000	0.000	0.000	46.420	1/3 acre lots, 30% imp	EA-8-OS *
0.123	1.199	0.500	0.839	0.000	2.661	>75% Grass cover, Good	EA-10-O S*, EA-9-OS *, PA-1, PA-11, PA-12, PA-2, PA-3, PA-4, PA-5, PA-6-R OW, PA-7-R OW
0.000	0.000	0.000	0.210	0.000	0.210	Brush, Good	EA-9-OS *
0.519	0.738	0.639	0.006	0.000	1.902	Paved parking	PA-12, PA-4, PA-5, PA-6-R OW, PA-7-R OW
0.369	0.193	0.761	0.000	0.000	1.323	Roofs	EA-10-O S*, EA-9-OS *, PA-11, PA-3
0.087	0.038	0.099	0.000	0.000	0.224	Sidewalks	PA-1, PA-11, PA-2, PA-3, PA-4, PA-5
0.000	0.000	0.210	0.000	0.000	0.210	Unconnected pavement	EA-10-O S*, EA-9-OS *
0.000	0.000	0.280	0.000	0.000	0.280	Unconnected roofs	PA-3



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**Ground Covers (selected nodes) (continued)**

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.270	0.040	0.050	0.000	0.360	Woods/grass comb., Good	EA-10-O S*, EA-9-OS *
<b>1.098</b>	<b>48.858</b>	<b>2.529</b>	<b>1.105</b>	<b>0.000</b>	<b>53.590</b>	<b>TOTAL AREA</b>	

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**Pipe Listing (selected nodes)**

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	RCP*	80.76	78.20	22.0	0.1164	0.013	36.0	0.0	0.0

Time span=0.00-54.00 hrs, dt=0.01 hrs, 5401 points  
 Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious  
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

<b>Subcatchment EA-10-OS*: EA-10-OS</b>	Runoff Area=0.480 ac 31.25% Impervious Runoff Depth=1.47" Tc=6.0 min CN=79/98 Runoff=0.66 cfs 0.059 af
<b>Subcatchment EA-8-OS*: EA-8-OS</b>	Runoff Area=46.420 ac 30.00% Impervious Runoff Depth=0.94" Flow Length=2,965' Tc=36.1 min CN=61/98 Runoff=13.94 cfs 3.648 af
<b>Subcatchment EA-9-OS*: EA-9-OS</b>	Runoff Area=2.220 ac 11.26% Impervious Runoff Depth=0.76" Flow Length=500' Tc=6.7 min CN=69/98 Runoff=1.33 cfs 0.140 af
<b>Subcatchment PA-1: PA-1</b>	Runoff Area=0.060 ac 21.67% Impervious Runoff Depth=0.68" Tc=6.0 min CN=57/98 Runoff=0.03 cfs 0.003 af
<b>Subcatchment PA-11: PA-11</b>	Runoff Area=0.746 ac 79.76% Impervious Runoff Depth=2.00" Tc=6.0 min CN=46/98 Runoff=1.33 cfs 0.125 af
<b>Subcatchment PA-12: PA-12</b>	Runoff Area=0.454 ac 1.32% Impervious Runoff Depth=0.97" Tc=6.0 min CN=78/98 Runoff=0.42 cfs 0.037 af
<b>Subcatchment PA-2: PA-2</b>	Runoff Area=0.060 ac 60.00% Impervious Runoff Depth=1.61" Tc=6.0 min CN=61/98 Runoff=0.08 cfs 0.008 af
<b>Subcatchment PA-3: PA-3</b>	Runoff Area=0.780 ac 51.28% Impervious Runoff Depth=2.22" Tc=6.0 min CN=92/98 Runoff=1.61 cfs 0.144 af
<b>Subcatchment PA-4: PA-4</b>	Runoff Area=1.218 ac 79.80% Impervious Runoff Depth=2.11" Tc=6.0 min CN=69/98 Runoff=2.28 cfs 0.214 af
<b>Subcatchment PA-5: PA-5</b>	Runoff Area=0.922 ac 89.15% Impervious Runoff Depth=2.27" Tc=6.0 min CN=63/98 Runoff=1.86 cfs 0.175 af
<b>Subcatchment PA-6-ROW: PA-6-ROW</b>	Runoff Area=0.120 ac 91.67% Impervious Runoff Depth=2.32" Tc=6.0 min CN=61/98 Runoff=0.25 cfs 0.023 af
<b>Subcatchment PA-7-ROW: PA-7-ROW</b>	Runoff Area=0.110 ac 86.36% Impervious Runoff Depth=2.20" Tc=6.0 min CN=61/98 Runoff=0.21 cfs 0.020 af
<b>Reach RCP*: 36" RCP</b>	Avg. Flow Depth=0.55' Max Vel=18.80 fps Inflow=16.71 cfs 4.532 af 36.0" Round Pipe n=0.013 L=22.0' S=0.1164 ' Capacity=227.52 cfs Outflow=16.71 cfs 4.532 af
<b>Link MTD-A1: MTD-A1</b>	Inflow=2.52 cfs 0.234 af Primary=2.52 cfs 0.234 af
<b>Link MTD-A2: MTD-A2</b>	Inflow=2.28 cfs 0.214 af Primary=2.28 cfs 0.214 af
<b>Link POA-A1*: POA-A1* (Rocky Brook HW)</b>	Inflow=16.88 cfs 4.569 af Primary=16.88 cfs 4.569 af

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NRCC 24-hr C 1-MER 1YR Rainfall=2.74"

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**Link POA-A1A\*: POA-A1A\***

Inflow=14.54 cfs 3.815 af  
Primary=14.54 cfs 3.815 af

**Link POA-A2\*: POA-A2\* (BANK ST)**

Inflow=0.30 cfs 0.028 af  
Primary=0.30 cfs 0.028 af

**Total Runoff Area = 53.590 ac Runoff Volume = 4.597 af Average Runoff Depth = 1.03"  
67.58% Pervious = 36.215 ac 32.42% Impervious = 17.375 ac**

**Summary for Subcatchment EA-10-OS\*: EA-10-OS**

Runoff = 0.66 cfs @ 12.14 hrs, Volume= 0.059 af, Depth= 1.47"

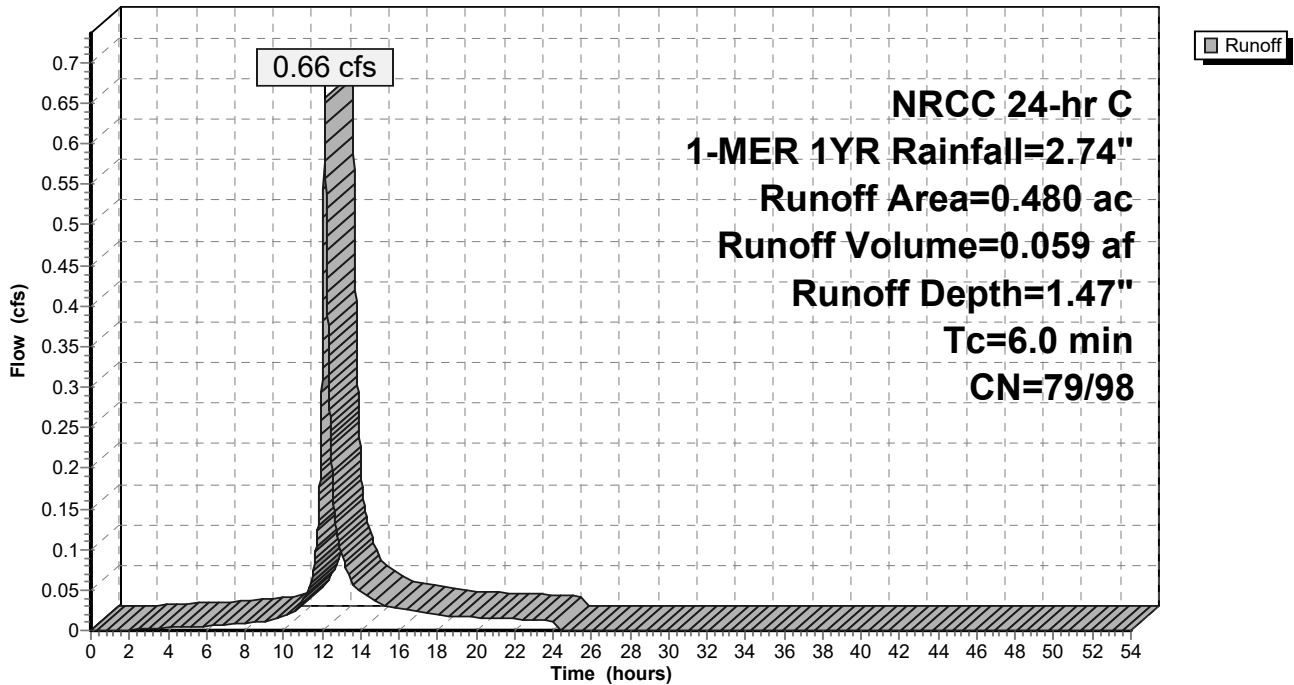
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 1-MER 1YR Rainfall=2.74"

Area (ac)	CN	Description
0.150	98	Roofs, HSG C
0.070	98	Unconnected pavement, HSG C
0.220	74	>75% Grass cover, Good, HSG C
0.040	72	Woods/grass comb., Good, HSG C
0.480	85	Weighted Average
0.330	79	68.75% Pervious Area
0.150	98	31.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EA-10-OS\*: EA-10-OS**

Hydrograph



**Summary for Subcatchment EA-8-OS\*: EA-8-OS**

Runoff = 13.94 cfs @ 12.52 hrs, Volume= 3.648 af, Depth= 0.94"

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 1-MER 1YR Rainfall=2.74"

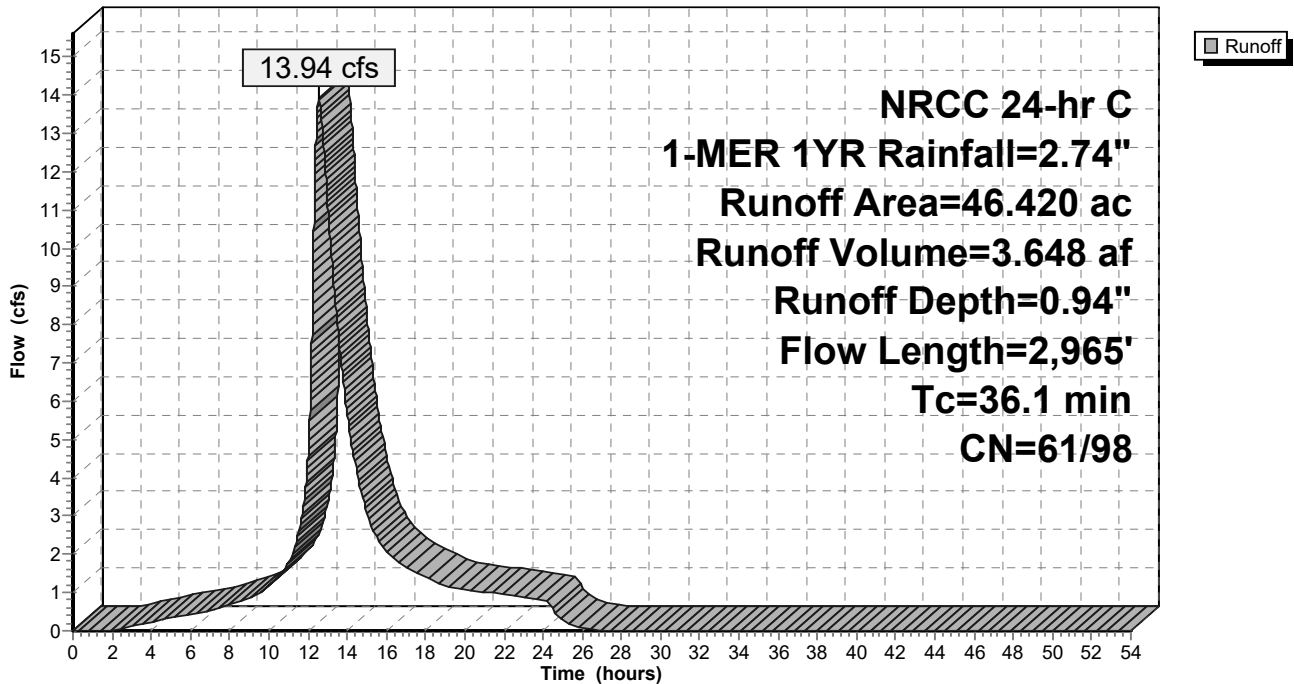
Area (ac)	CN	Description
46.420	72	1/3 acre lots, 30% imp, HSG B
32.494	61	70.00% Pervious Area
13.926	98	30.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.7	100	0.0100	0.13		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.31"
3.9	370	0.0060	1.57		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
17.5	2,100		2.00		<b>Direct Entry, Pipe Flow</b>
2.0	395	0.0170	3.22	57.93	<b>Trap/Vee/Rect Channel Flow,</b> Bot.W=4.50' D=2.00' Z= 2.0 & 2.5 ' Top.W=13.50' n= 0.070
36.1	2,965	Total			

**Subcatchment EA-8-OS\*: EA-8-OS**

Hydrograph



**Summary for Subcatchment EA-9-OS\*: EA-9-0S**

Runoff = 1.33 cfs @ 12.16 hrs, Volume= 0.140 af, Depth= 0.76"

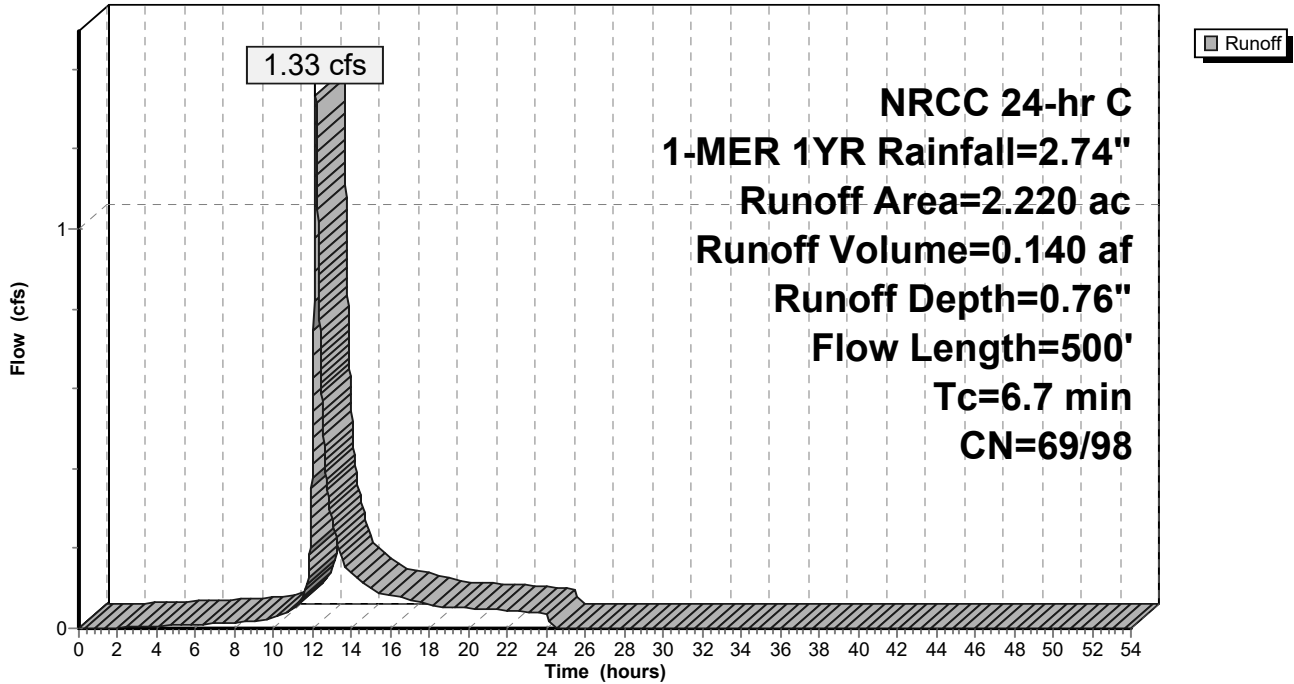
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 1-MER 1YR Rainfall=2.74"

Area (ac)	CN	Description
0.250	98	Roofs, HSG C
0.140	98	Unconnected pavement, HSG C
0.430	80	>75% Grass cover, Good, HSG D
0.870	61	>75% Grass cover, Good, HSG B
0.270	58	Woods/grass comb., Good, HSG B
0.050	79	Woods/grass comb., Good, HSG D
0.210	73	Brush, Good, HSG D
2.220	72	Weighted Average
1.970	69	88.74% Pervious Area
0.250	98	11.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	70	0.0900	0.29		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.31"
1.5	190	0.0900	2.10		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
1.2	240	0.0170	3.22	57.93	<b>Trap/Vee/Rect Channel Flow,</b> Bot.W=4.50' D=2.00' Z= 2.0 & 2.5 '/' Top.W=13.50' n= 0.070
6.7	500	Total			

Subcatchment EA-9-OS\*: EA-9-0S

Hydrograph





**Summary for Subcatchment PA-1: PA-1**

Runoff = 0.03 cfs @ 12.14 hrs, Volume= 0.003 af, Depth= 0.68"

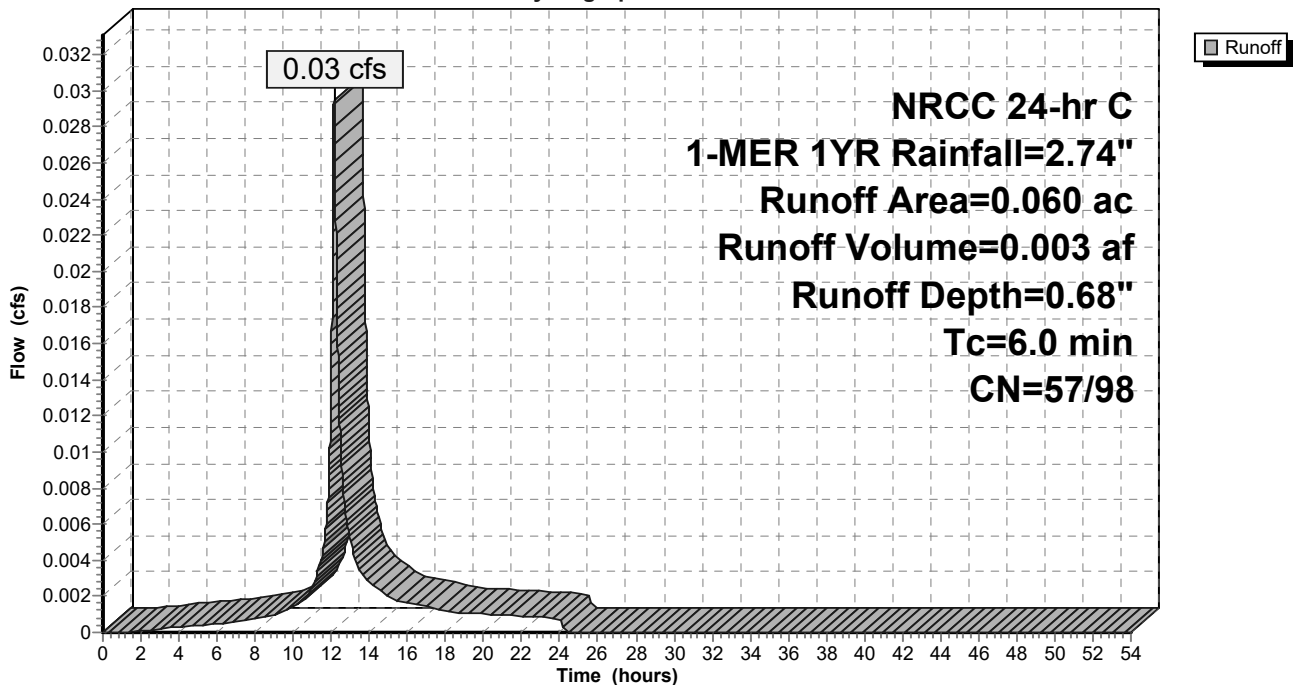
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 1-MER 1YR Rainfall=2.74"

Area (ac)	CN	Description
* 0.003	98	Sidewalks, HSG A
* 0.010	98	Sidewalks, HSG B
0.009	39	>75% Grass cover, Good, HSG A
0.038	61	>75% Grass cover, Good, HSG B
0.060	66	Weighted Average
0.047	57	78.33% Pervious Area
0.013	98	21.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PA-1: PA-1**

Hydrograph



**Summary for Subcatchment PA-11: PA-11**

Runoff = 1.33 cfs @ 12.14 hrs, Volume= 0.125 af, Depth= 2.00"

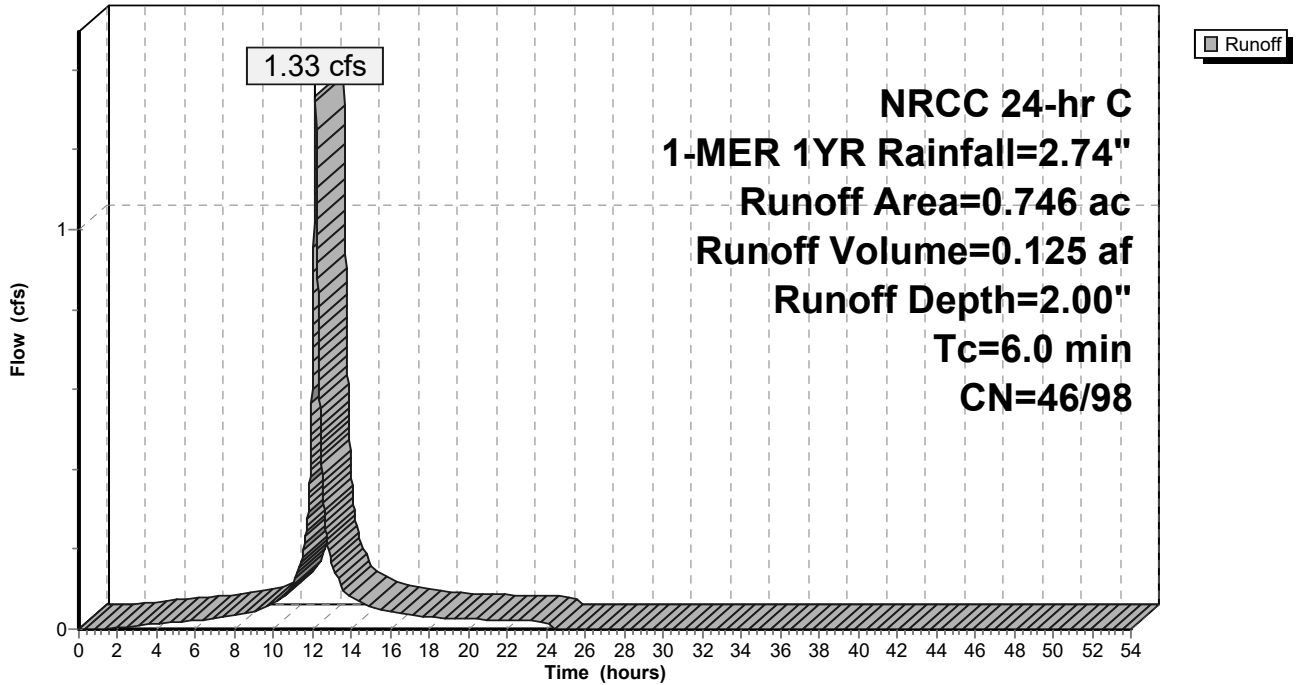
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 1-MER 1YR Rainfall=2.74"

Area (ac)	CN	Description
0.350	98	Roofs, HSG A
0.193	98	Roofs, HSG B
* 0.049	98	Sidewalks, HSG A
* 0.003	98	Sidewalks, HSG B
0.013	74	>75% Grass cover, Good, HSG C
0.024	61	>75% Grass cover, Good, HSG B
0.114	39	>75% Grass cover, Good, HSG A
0.746	87	Weighted Average
0.151	46	20.24% Pervious Area
0.595	98	79.76% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PA-11: PA-11**

Hydrograph



**Summary for Subcatchment PA-12: PA-12**

Runoff = 0.42 cfs @ 12.15 hrs, Volume= 0.037 af, Depth= 0.97"

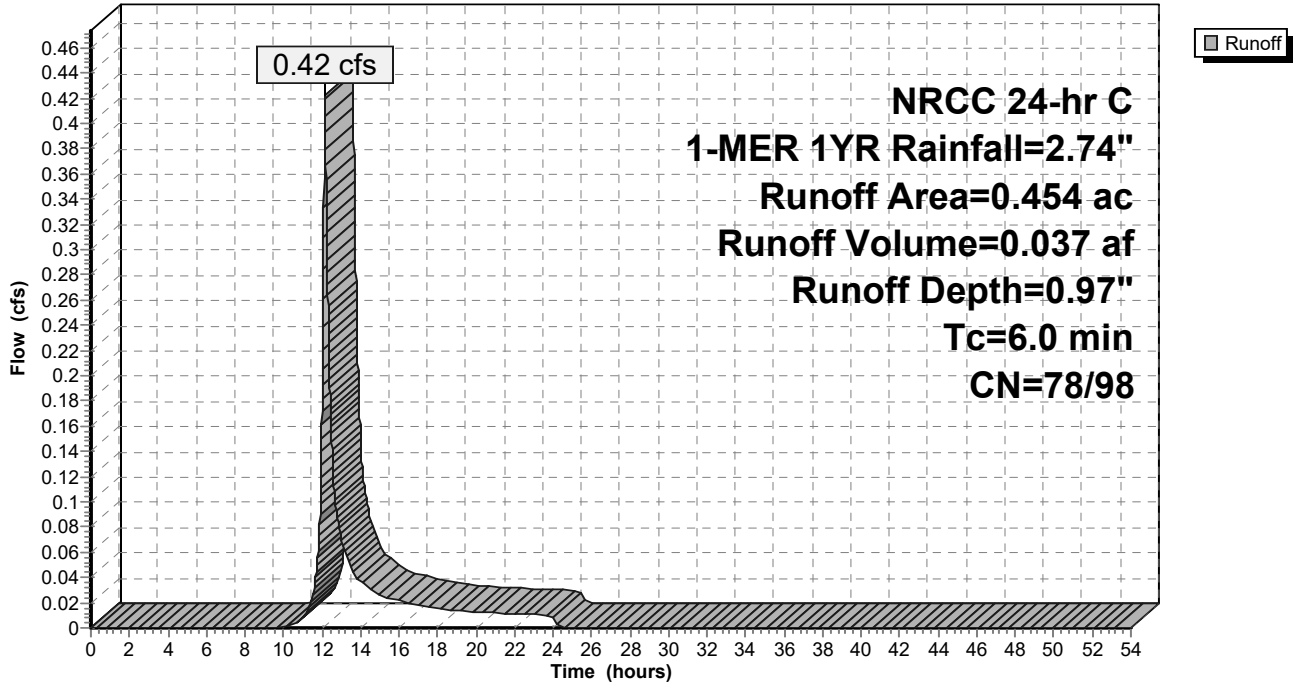
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 1-MER 1YR Rainfall=2.74"

Area (ac)	CN	Description
0.039	61	>75% Grass cover, Good, HSG B
0.006	98	Paved parking, HSG D
0.409	80	>75% Grass cover, Good, HSG D
0.454	79	Weighted Average
0.448	78	98.68% Pervious Area
0.006	98	1.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PA-12: PA-12**

Hydrograph



**Summary for Subcatchment PA-2: PA-2**

Runoff = 0.08 cfs @ 12.14 hrs, Volume= 0.008 af, Depth= 1.61"

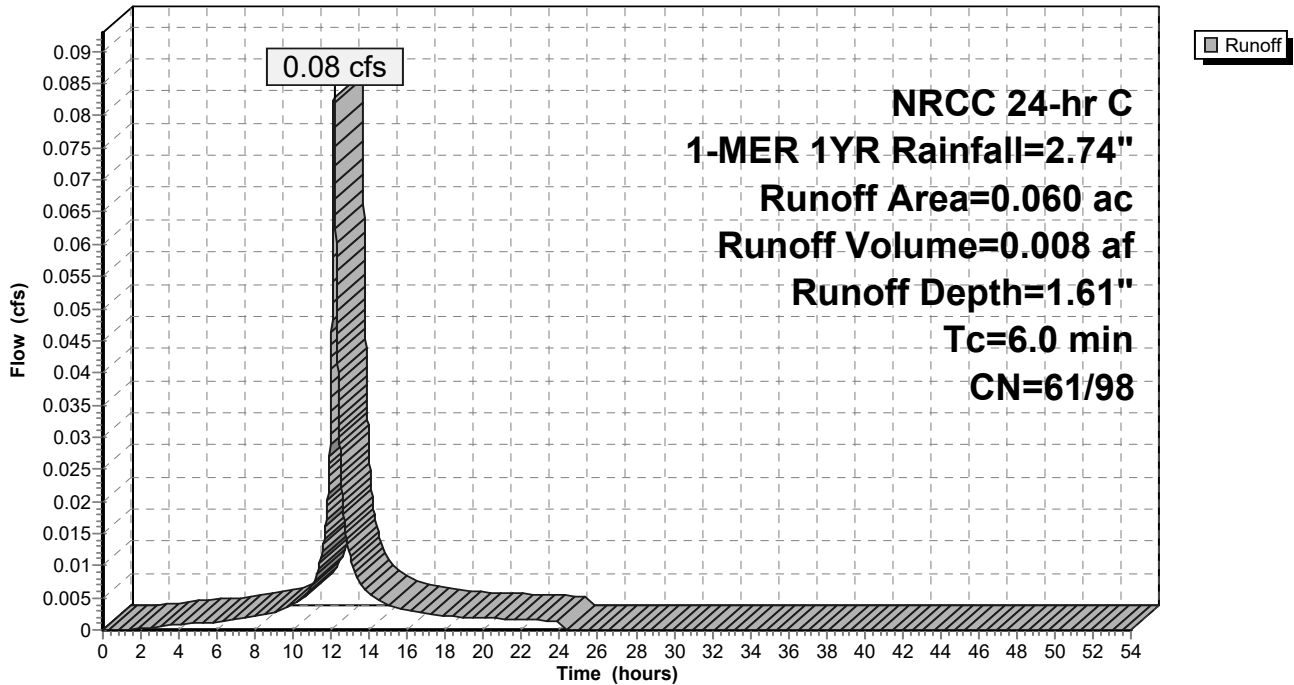
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 1-MER 1YR Rainfall=2.74"

Area (ac)	CN	Description
* 0.018	98	Sidewalks, HSG A
* 0.018	98	Sidewalks, HSG B
0.024	61	>75% Grass cover, Good, HSG B
0.060	83	Weighted Average
0.024	61	40.00% Pervious Area
0.036	98	60.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PA-2: PA-2**

Hydrograph



**Summary for Subcatchment PA-3: PA-3**

Runoff = 1.61 cfs @ 12.14 hrs, Volume= 0.144 af, Depth= 2.22"

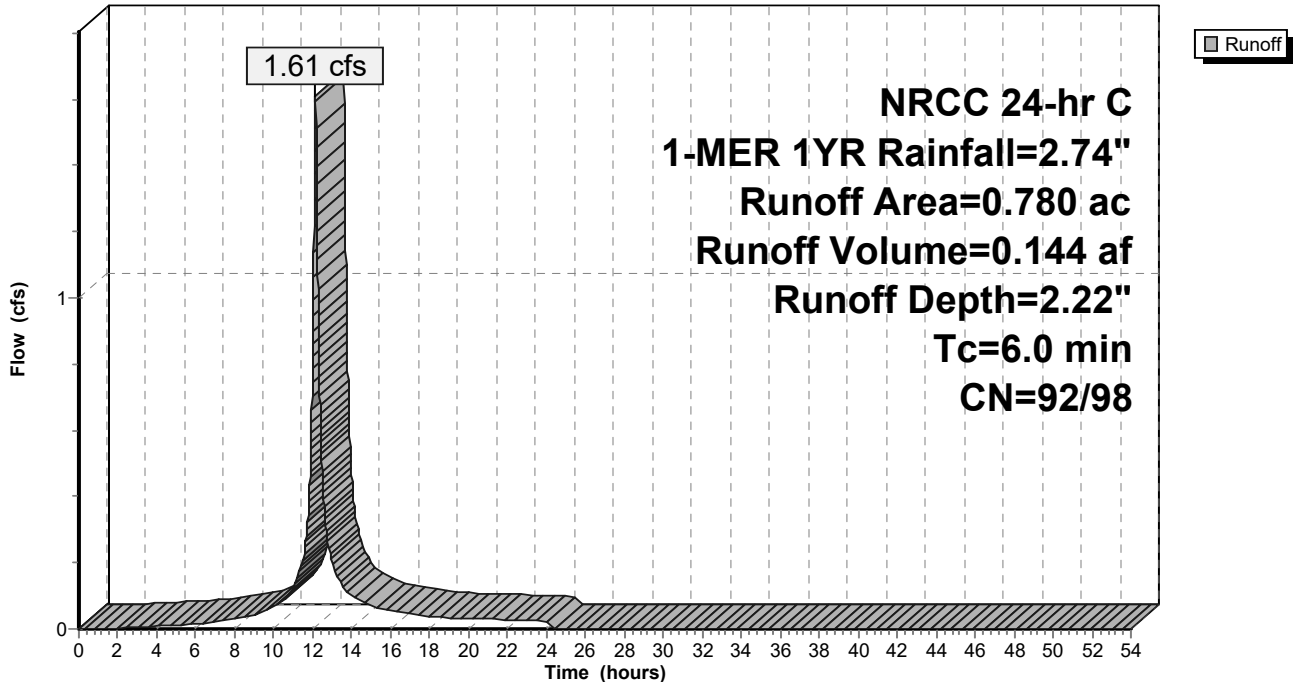
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 1-MER 1YR Rainfall=2.74"

Area (ac)	CN	Description
0.019	98	Roofs, HSG A
0.361	98	Roofs, HSG C
* 0.020	98	Sidewalks HSG C
0.100	74	>75% Grass cover, Good, HSG C
0.280	98	Unconnected roofs, HSG C
0.780	95	Weighted Average
0.380	92	48.72% Pervious Area
0.400	98	51.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PA-3: PA-3**

Hydrograph



**Summary for Subcatchment PA-4: PA-4**

Runoff = 2.28 cfs @ 12.14 hrs, Volume= 0.214 af, Depth= 2.11"

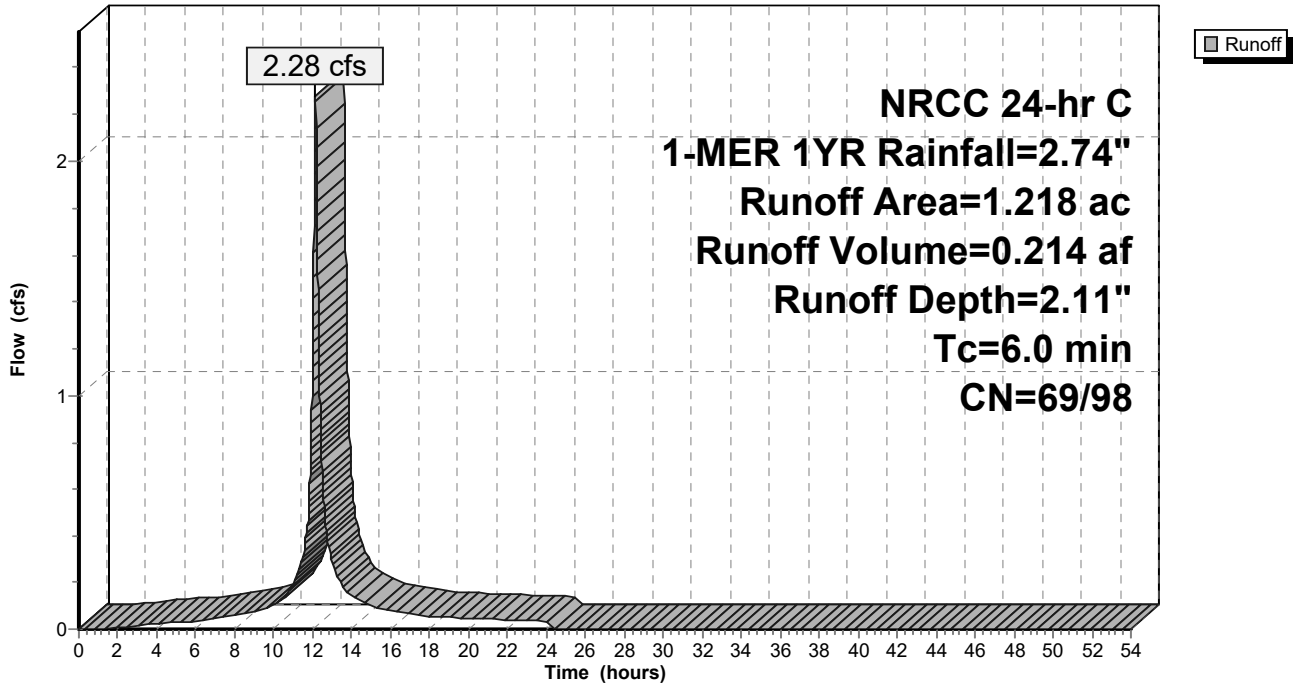
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 1-MER 1YR Rainfall=2.74"

Area (ac)	CN	Description
0.314	98	Paved parking, HSG A
0.112	98	Paved parking, HSG B
0.450	98	Paved parking, HSG C
* 0.017	98	Sidewalks, HSG A
* 0.079	98	Sidewalks, HSG C
0.152	74	>75% Grass cover, Good, HSG C
0.094	61	>75% Grass cover, Good, HSG B
1.218	92	Weighted Average
0.246	69	20.20% Pervious Area
0.972	98	79.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PA-4: PA-4**

Hydrograph



**Summary for Subcatchment PA-5: PA-5**

Runoff = 1.86 cfs @ 12.14 hrs, Volume= 0.175 af, Depth= 2.27"

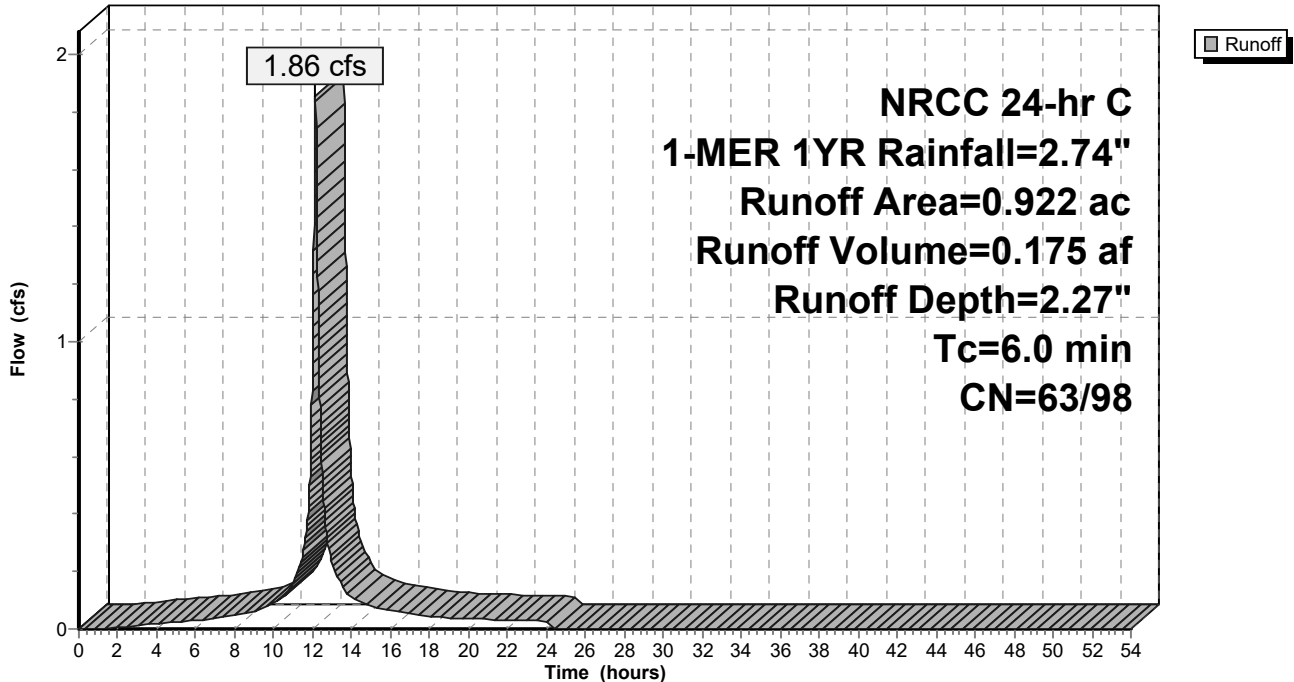
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 1-MER 1YR Rainfall=2.74"

Area (ac)	CN	Description
0.626	98	Paved parking, HSG B
* 0.007	98	Sidewalks, HSG B
0.189	98	Paved parking, HSG C
0.015	74	>75% Grass cover, Good, HSG C
0.085	61	>75% Grass cover, Good, HSG B
0.922	94	Weighted Average
0.100	63	10.85% Pervious Area
0.822	98	89.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PA-5: PA-5**

Hydrograph



**Summary for Subcatchment PA-6-ROW: PA-6-ROW**

Runoff = 0.25 cfs @ 12.14 hrs, Volume= 0.023 af, Depth= 2.32"

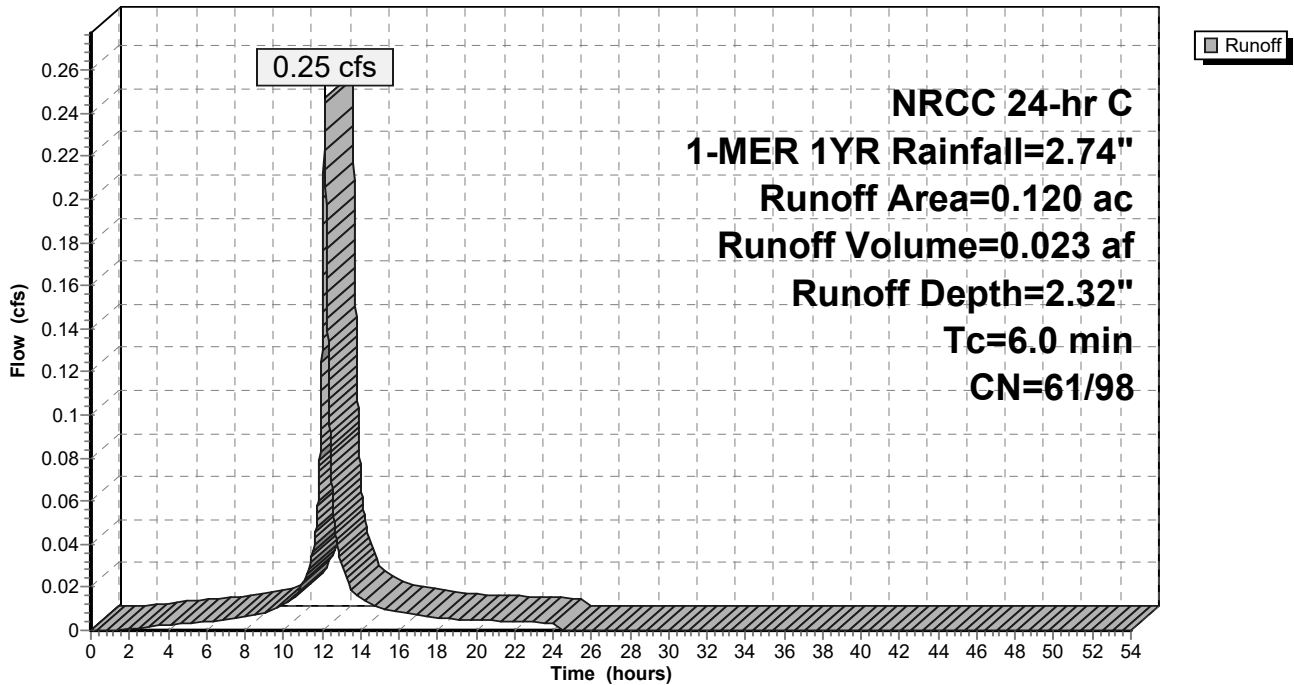
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 1-MER 1YR Rainfall=2.74"

Area (ac)	CN	Description
0.110	98	Paved parking, HSG A
0.010	61	>75% Grass cover, Good, HSG B
0.120	95	Weighted Average
0.010	61	8.33% Pervious Area
0.110	98	91.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PA-6-ROW: PA-6-ROW**

Hydrograph





**Summary for Subcatchment PA-7-ROW: PA-7-ROW**

Runoff = 0.21 cfs @ 12.14 hrs, Volume= 0.020 af, Depth= 2.20"

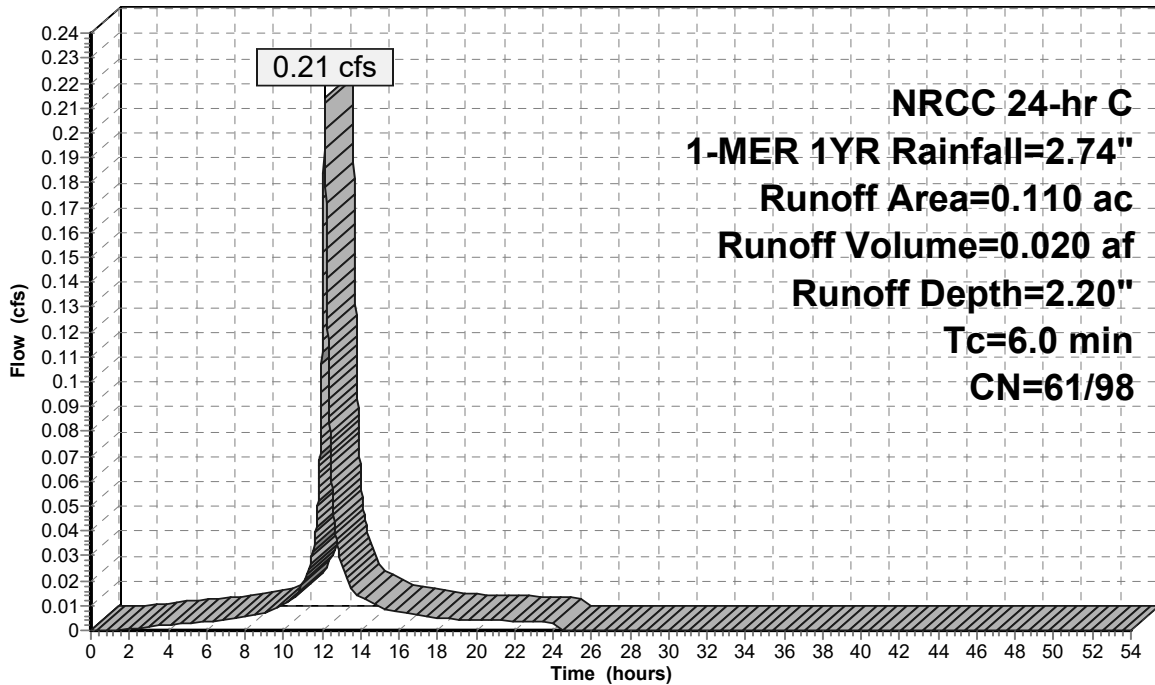
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 1-MER 1YR Rainfall=2.74"

Area (ac)	CN	Description
0.095	98	Paved parking, HSG A
0.015	61	>75% Grass cover, Good, HSG B
0.110	93	Weighted Average
0.015	61	13.64% Pervious Area
0.095	98	86.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PA-7-ROW: PA-7-ROW**

Hydrograph



Runoff

**NRCC 24-hr C**  
**1-MER 1YR Rainfall=2.74"**  
**Runoff Area=0.110 ac**  
**Runoff Volume=0.020 af**  
**Runoff Depth=2.20"**  
**Tc=6.0 min**  
**CN=61/98**

### Summary for Reach RCP\*: 36" RCP

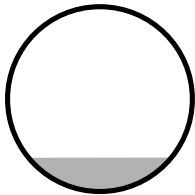
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 52.966 ac, 32.55% Impervious, Inflow Depth = 1.03" for 1-MER 1YR event  
 Inflow = 16.71 cfs @ 12.44 hrs, Volume= 4.532 af  
 Outflow = 16.71 cfs @ 12.44 hrs, Volume= 4.532 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs  
 Max. Velocity= 18.80 fps, Min. Travel Time= 0.0 min  
 Avg. Velocity = 8.42 fps, Avg. Travel Time= 0.0 min

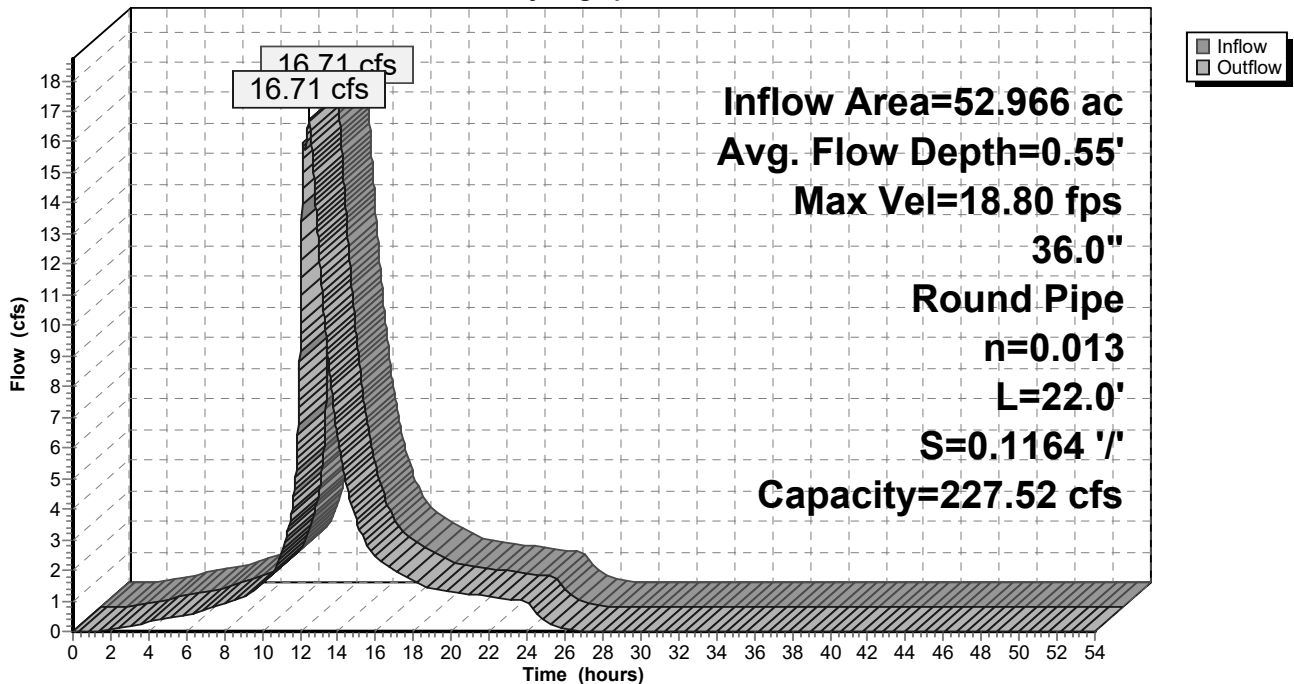
Peak Storage= 20 cf @ 12.44 hrs  
 Average Depth at Peak Storage= 0.55' , Surface Width= 2.32'  
 Bank-Full Depth= 3.00' Flow Area= 7.1 sf, Capacity= 227.52 cfs

36.0" Round Pipe  
 n= 0.013 Concrete pipe, bends & connections  
 Length= 22.0' Slope= 0.1164 '/'  
 Inlet Invert= 80.76', Outlet Invert= 78.20'



### Reach RCP\*: 36" RCP

Hydrograph

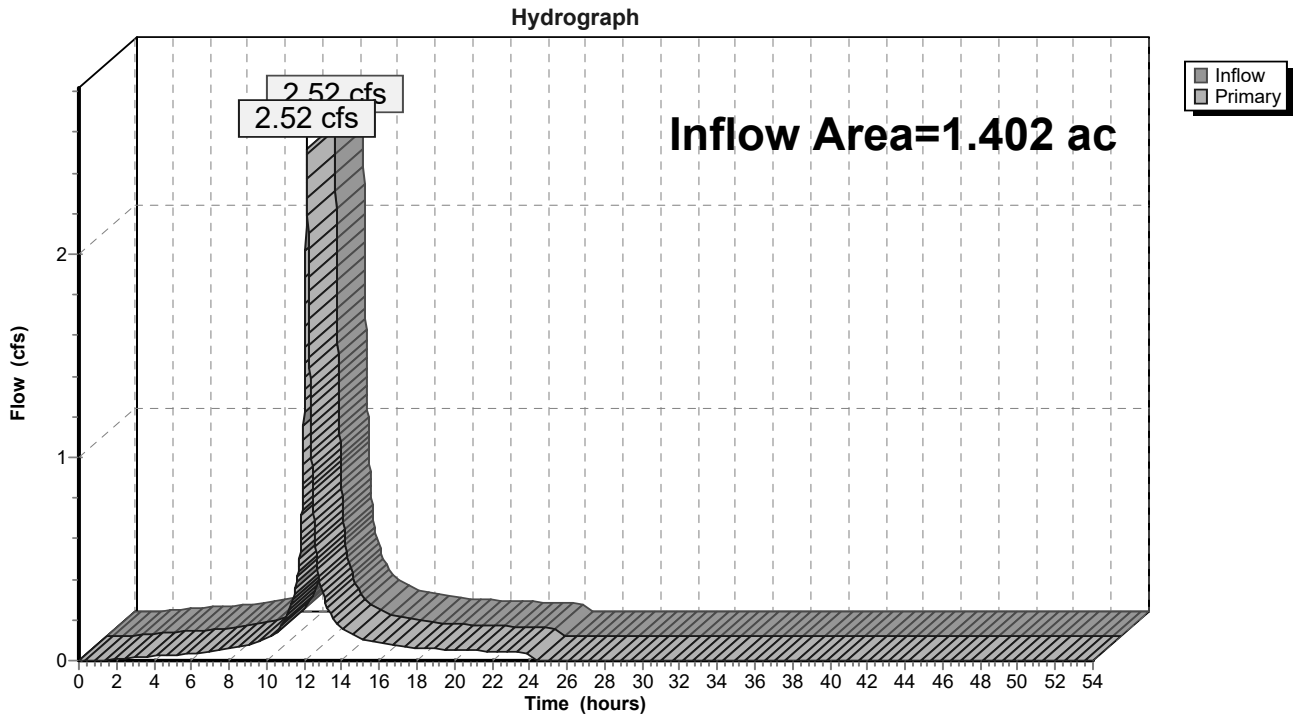


### Summary for Link MTD-A1: MTD-A1

Inflow Area = 1.402 ac, 69.33% Impervious, Inflow Depth = 2.00" for 1-MER 1YR event  
Inflow = 2.52 cfs @ 12.14 hrs, Volume= 0.234 af  
Primary = 2.52 cfs @ 12.14 hrs, Volume= 0.234 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link MTD-A1: MTD-A1

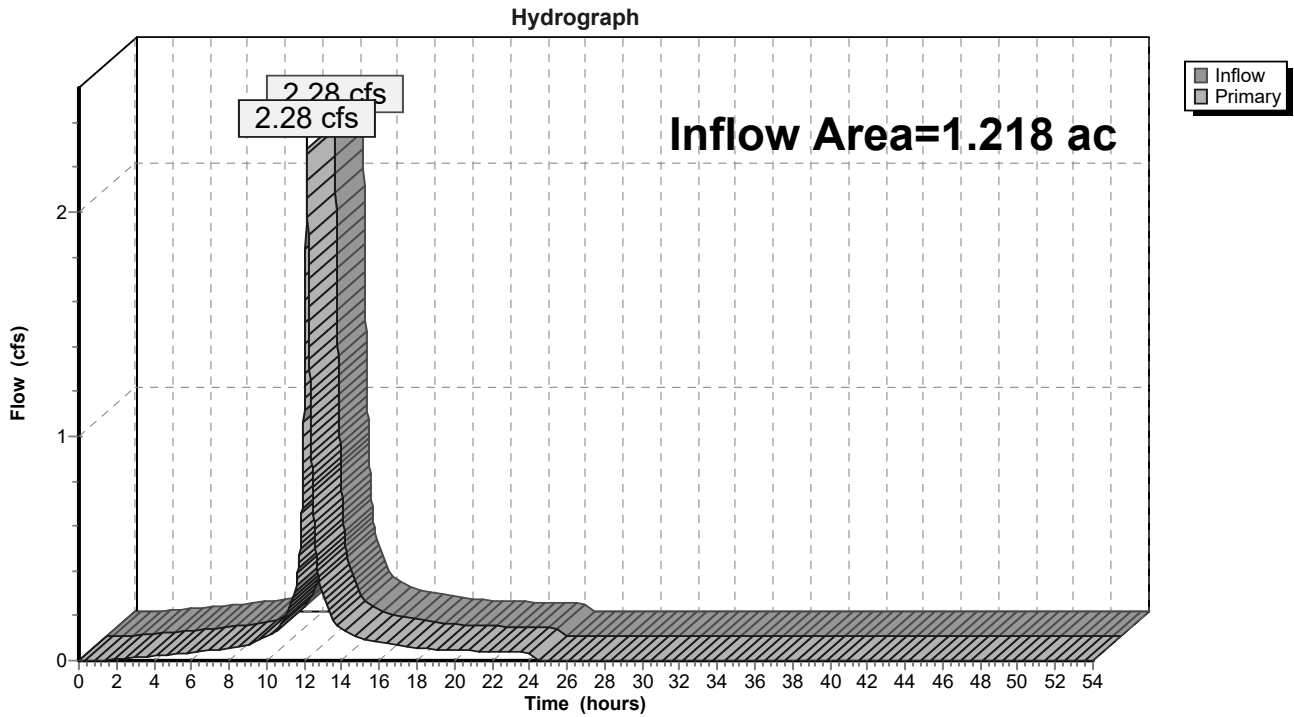


### Summary for Link MTD-A2: MTD-A2

Inflow Area = 1.218 ac, 79.80% Impervious, Inflow Depth = 2.11" for 1-MER 1YR event  
Inflow = 2.28 cfs @ 12.14 hrs, Volume= 0.214 af  
Primary = 2.28 cfs @ 12.14 hrs, Volume= 0.214 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link MTD-A2: MTD-A2



### Summary for Link POA-A1\*: POA-A1\* (Rocky Brook HW)

[62] Hint: Exceeded Reach RCP\* OUTLET depth by 1.80' @ 0.00 hrs

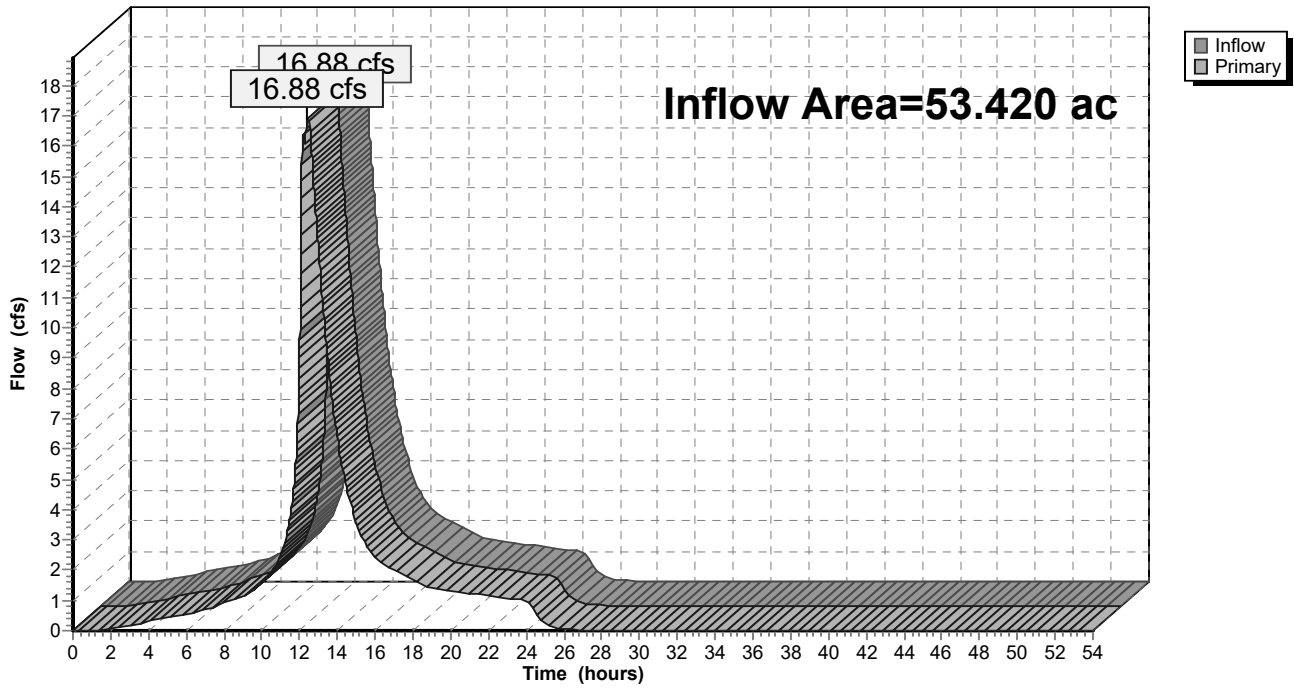
Inflow Area = 53.420 ac, 32.28% Impervious, Inflow Depth = 1.03" for 1-MER 1YR event  
Inflow = 16.88 cfs @ 12.44 hrs, Volume= 4.569 af  
Primary = 16.88 cfs @ 12.44 hrs, Volume= 4.569 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

Fixed water surface Elevation= 80.00'

### Link POA-A1\*: POA-A1\* (Rocky Brook HW)

Hydrograph



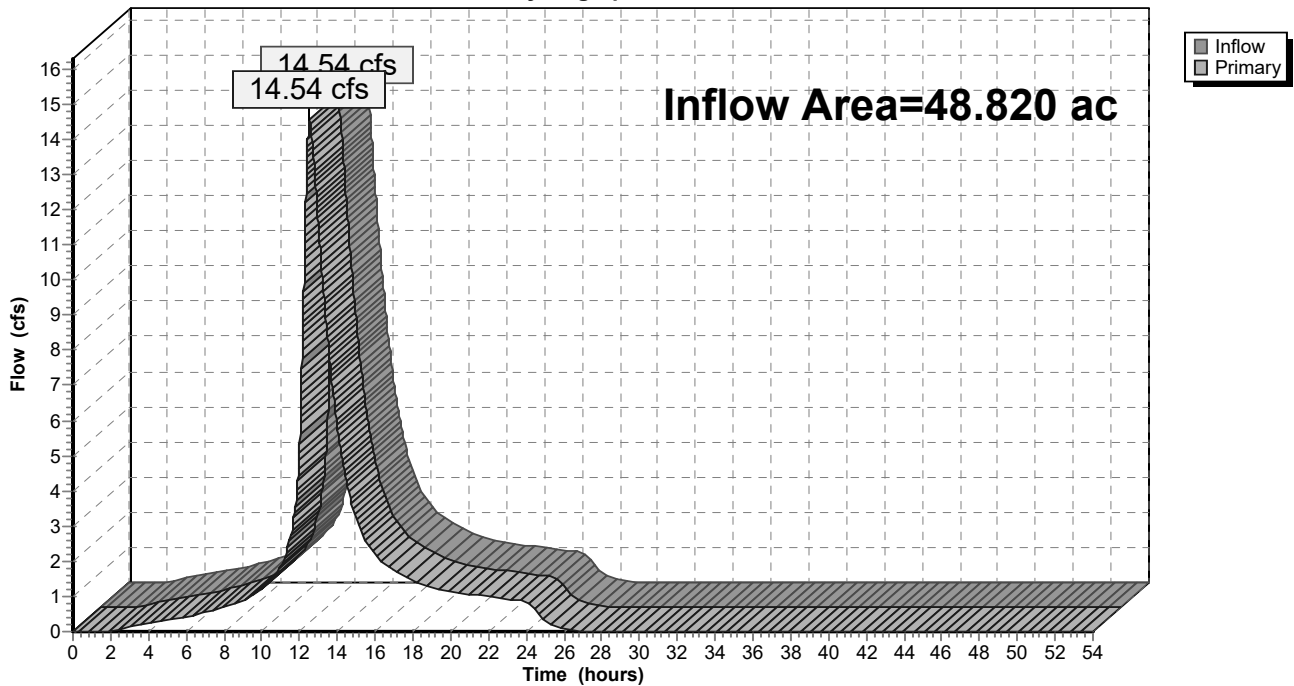
### Summary for Link POA-A1A\*: POA-A1A\*

Inflow Area = 48.820 ac, 29.29% Impervious, Inflow Depth = 0.94" for 1-MER 1YR event  
Inflow = 14.54 cfs @ 12.52 hrs, Volume= 3.815 af  
Primary = 14.54 cfs @ 12.52 hrs, Volume= 3.815 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-A1A\*: POA-A1A\*

Hydrograph

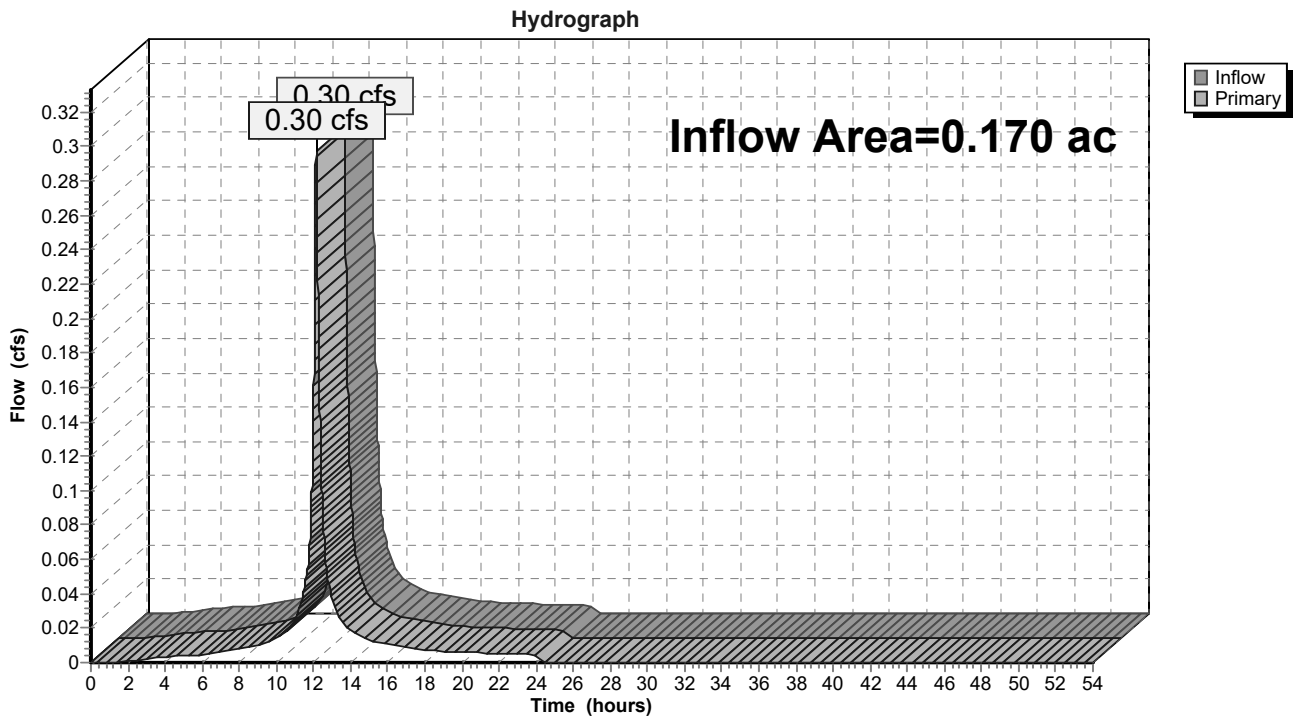


### Summary for Link POA-A2\*: POA-A2\* (BANK ST)

Inflow Area = 0.170 ac, 77.06% Impervious, Inflow Depth = 2.00" for 1-MER 1YR event  
Inflow = 0.30 cfs @ 12.14 hrs, Volume= 0.028 af  
Primary = 0.30 cfs @ 12.14 hrs, Volume= 0.028 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-A2\*: POA-A2\* (BANK ST)



Time span=0.00-54.00 hrs, dt=0.01 hrs, 5401 points  
 Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious  
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment EA-10-OS\*: EA-10-OS** Runoff Area=0.480 ac 31.25% Impervious Runoff Depth=1.94"  
 Tc=6.0 min CN=79/98 Runoff=0.87 cfs 0.078 af

**Subcatchment EA-8-OS\*: EA-8-OS** Runoff Area=46.420 ac 30.00% Impervious Runoff Depth=1.27"  
 Flow Length=2,965' Tc=36.1 min CN=61/98 Runoff=18.95 cfs 4.897 af

**Subcatchment EA-9-OS\*: EA-9-OS** Runoff Area=2.220 ac 11.26% Impervious Runoff Depth=1.09"  
 Flow Length=500' Tc=6.7 min CN=69/98 Runoff=2.06 cfs 0.202 af

**Subcatchment PA-1: PA-1** Runoff Area=0.060 ac 21.67% Impervious Runoff Depth=0.94"  
 Tc=6.0 min CN=57/98 Runoff=0.04 cfs 0.005 af

**Subcatchment PA-11: PA-11** Runoff Area=0.746 ac 79.76% Impervious Runoff Depth=2.47"  
 Tc=6.0 min CN=46/98 Runoff=1.62 cfs 0.153 af

**Subcatchment PA-12: PA-12** Runoff Area=0.454 ac 1.32% Impervious Runoff Depth=1.38"  
 Tc=6.0 min CN=78/98 Runoff=0.61 cfs 0.052 af

**Subcatchment PA-2: PA-2** Runoff Area=0.060 ac 60.00% Impervious Runoff Depth=2.04"  
 Tc=6.0 min CN=61/98 Runoff=0.11 cfs 0.010 af

**Subcatchment PA-3: PA-3** Runoff Area=0.780 ac 51.28% Impervious Runoff Depth=2.77"  
 Tc=6.0 min CN=92/98 Runoff=1.99 cfs 0.180 af

**Subcatchment PA-4: PA-4** Runoff Area=1.218 ac 79.80% Impervious Runoff Depth=2.63"  
 Tc=6.0 min CN=69/98 Runoff=2.83 cfs 0.267 af

**Subcatchment PA-5: PA-5** Runoff Area=0.922 ac 89.15% Impervious Runoff Depth=2.81"  
 Tc=6.0 min CN=63/98 Runoff=2.28 cfs 0.216 af

**Subcatchment PA-6-ROW: PA-6-ROW** Runoff Area=0.120 ac 91.67% Impervious Runoff Depth=2.86"  
 Tc=6.0 min CN=61/98 Runoff=0.30 cfs 0.029 af

**Subcatchment PA-7-ROW: PA-7-ROW** Runoff Area=0.110 ac 86.36% Impervious Runoff Depth=2.72"  
 Tc=6.0 min CN=61/98 Runoff=0.26 cfs 0.025 af

**Reach RCP\*: 36" RCP** Avg. Flow Depth=0.64' Max Vel=20.50 fps Inflow=22.45 cfs 6.026 af  
 36.0" Round Pipe n=0.013 L=22.0' S=0.1164 '/' Capacity=227.52 cfs Outflow=22.45 cfs 6.026 af

**Link MTD-A1: MTD-A1** Inflow=3.15 cfs 0.293 af  
 Primary=3.15 cfs 0.293 af

**Link MTD-A2: MTD-A2** Inflow=2.83 cfs 0.267 af  
 Primary=2.83 cfs 0.267 af

**Link POA-A1\*: POA-A1\* (Rocky Brook HW)** Inflow=22.65 cfs 6.078 af  
 Primary=22.65 cfs 6.078 af



**200811\_Model**

Prepared by Maser Consulting

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NRCC 24-hr C 2-MER 2YR Rainfall=3.31"

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**Link POA-A1A\*: POA-A1A\***

Inflow=19.81 cfs 5.133 af  
Primary=19.81 cfs 5.133 af

**Link POA-A2\*: POA-A2\* (BANK ST)**

Inflow=0.37 cfs 0.035 af  
Primary=0.37 cfs 0.035 af

**Total Runoff Area = 53.590 ac Runoff Volume = 6.114 af Average Runoff Depth = 1.37"  
67.58% Pervious = 36.215 ac 32.42% Impervious = 17.375 ac**

**Summary for Subcatchment EA-10-OS\*: EA-10-OS**

Runoff = 0.87 cfs @ 12.14 hrs, Volume= 0.078 af, Depth= 1.94"

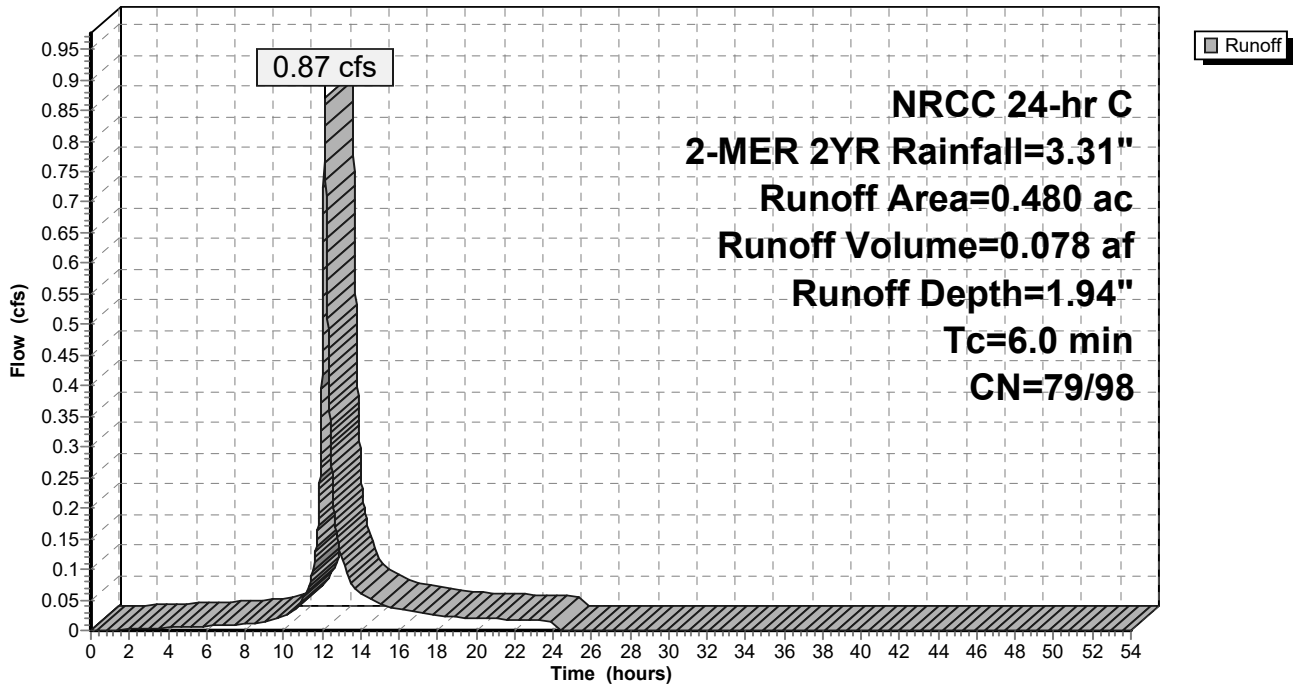
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 2-MER 2YR Rainfall=3.31"

Area (ac)	CN	Description
0.150	98	Roofs, HSG C
0.070	98	Unconnected pavement, HSG C
0.220	74	>75% Grass cover, Good, HSG C
0.040	72	Woods/grass comb., Good, HSG C
0.480	85	Weighted Average
0.330	79	68.75% Pervious Area
0.150	98	31.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EA-10-OS\*: EA-10-OS**

Hydrograph



**Summary for Subcatchment EA-8-OS\*: EA-8-OS**

Runoff = 18.95 cfs @ 12.52 hrs, Volume= 4.897 af, Depth= 1.27"

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 2-MER 2YR Rainfall=3.31"

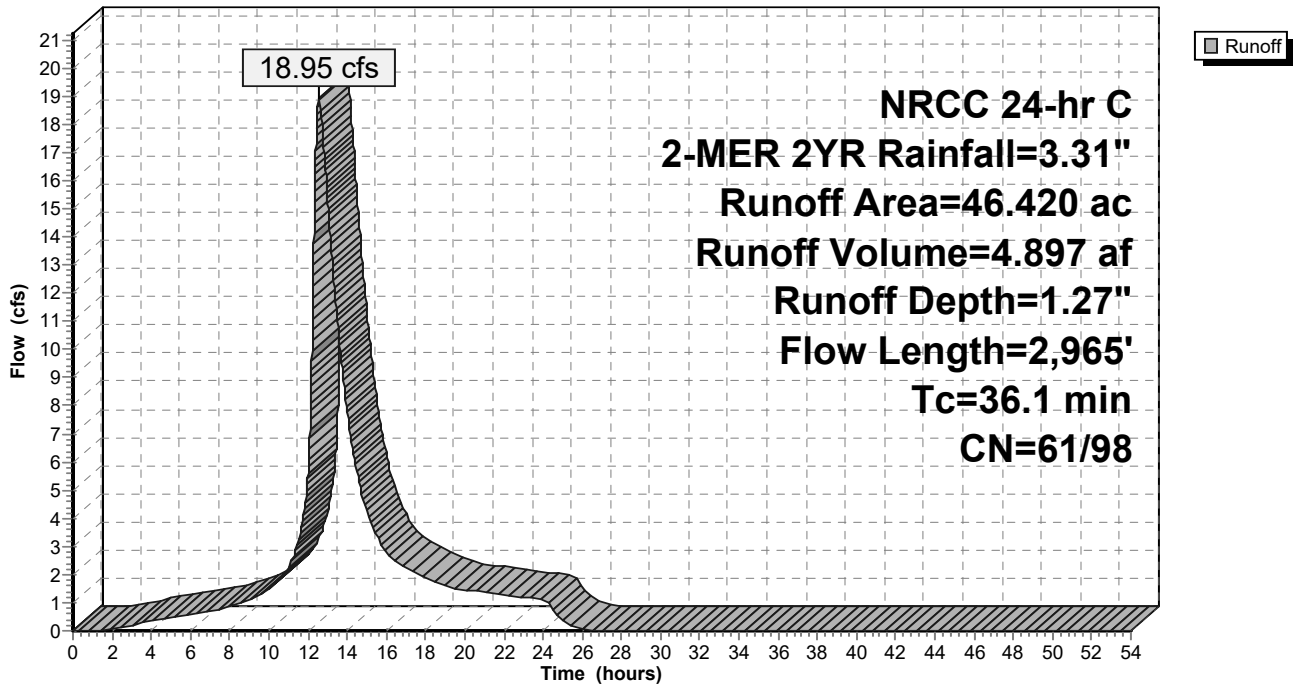
Area (ac)	CN	Description
46.420	72	1/3 acre lots, 30% imp, HSG B
32.494	61	70.00% Pervious Area
13.926	98	30.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.7	100	0.0100	0.13		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.31"
3.9	370	0.0060	1.57		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
17.5	2,100		2.00		<b>Direct Entry, Pipe Flow</b>
2.0	395	0.0170	3.22	57.93	<b>Trap/Vee/Rect Channel Flow,</b> Bot.W=4.50' D=2.00' Z= 2.0 & 2.5 ' Top.W=13.50' n= 0.070
36.1	2,965	Total			

**Subcatchment EA-8-OS\*: EA-8-OS**

Hydrograph



**Summary for Subcatchment EA-9-OS\*: EA-9-0S**

Runoff = 2.06 cfs @ 12.15 hrs, Volume= 0.202 af, Depth= 1.09"

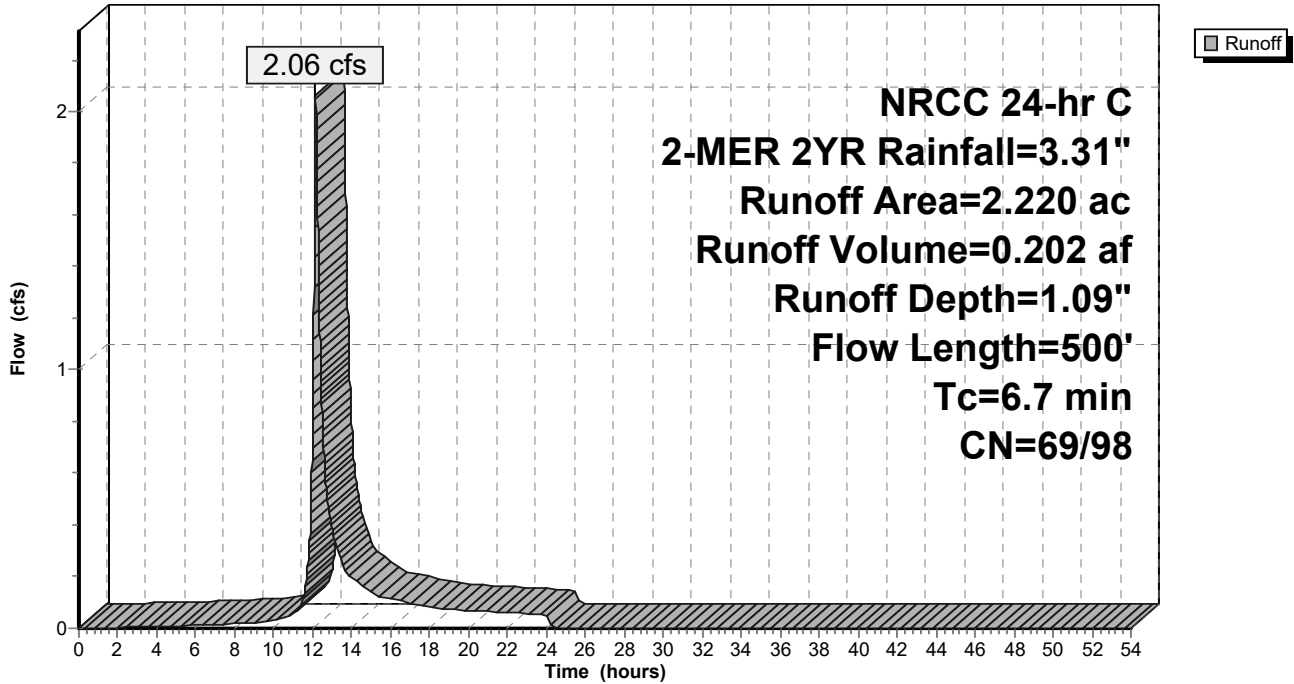
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 2-MER 2YR Rainfall=3.31"

Area (ac)	CN	Description
0.250	98	Roofs, HSG C
0.140	98	Unconnected pavement, HSG C
0.430	80	>75% Grass cover, Good, HSG D
0.870	61	>75% Grass cover, Good, HSG B
0.270	58	Woods/grass comb., Good, HSG B
0.050	79	Woods/grass comb., Good, HSG D
0.210	73	Brush, Good, HSG D
2.220	72	Weighted Average
1.970	69	88.74% Pervious Area
0.250	98	11.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	70	0.0900	0.29		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.31"
1.5	190	0.0900	2.10		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
1.2	240	0.0170	3.22	57.93	<b>Trap/Vee/Rect Channel Flow,</b> Bot.W=4.50' D=2.00' Z= 2.0 & 2.5 '/' Top.W=13.50' n= 0.070
6.7	500	Total			

Subcatchment EA-9-OS\*: EA-9-0S

Hydrograph



**Summary for Subcatchment PA-1: PA-1**

Runoff = 0.04 cfs @ 12.15 hrs, Volume= 0.005 af, Depth= 0.94"

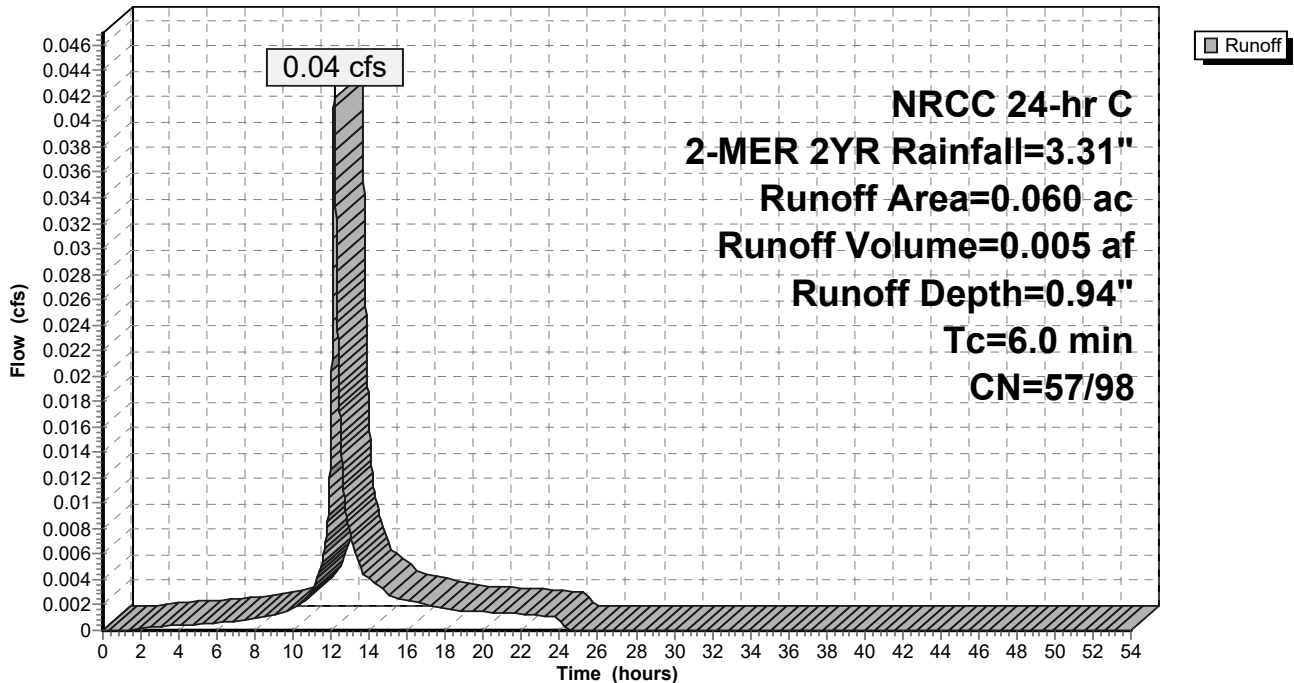
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 2-MER 2YR Rainfall=3.31"

Area (ac)	CN	Description
* 0.003	98	Sidewalks, HSG A
* 0.010	98	Sidewalks, HSG B
0.009	39	>75% Grass cover, Good, HSG A
0.038	61	>75% Grass cover, Good, HSG B
0.060	66	Weighted Average
0.047	57	78.33% Pervious Area
0.013	98	21.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PA-1: PA-1**

Hydrograph



**Summary for Subcatchment PA-11: PA-11**

Runoff = 1.62 cfs @ 12.14 hrs, Volume= 0.153 af, Depth= 2.47"

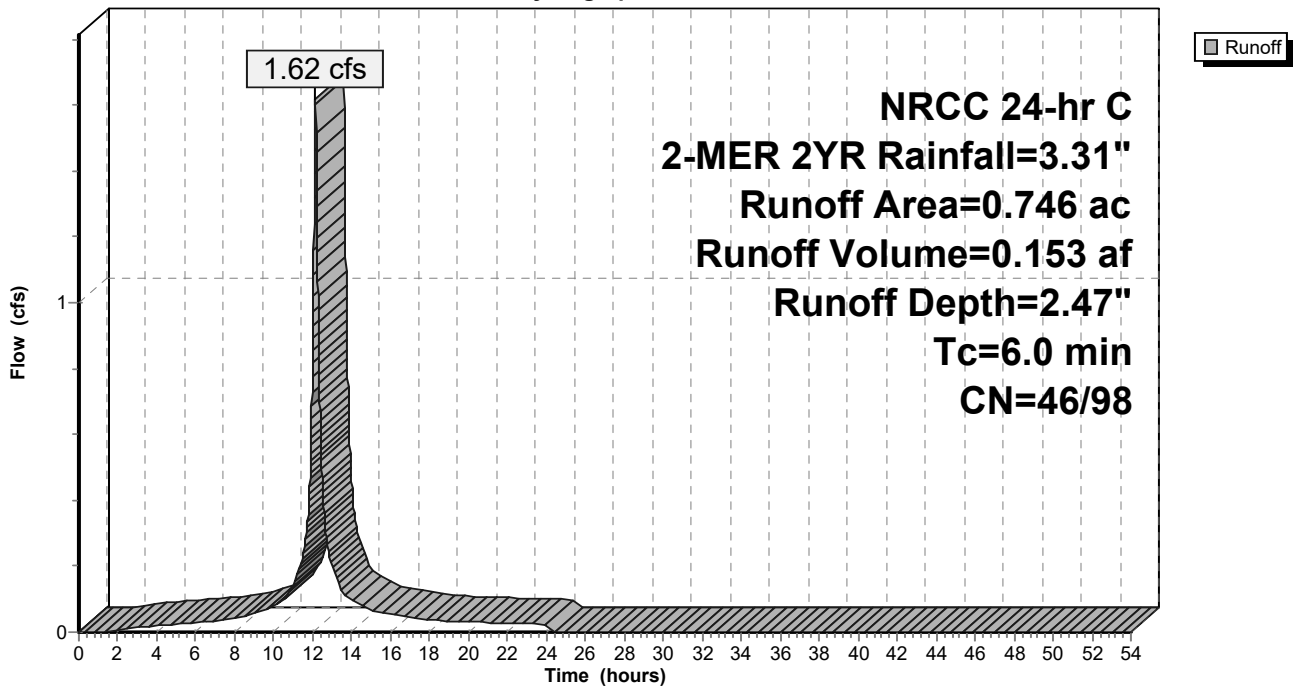
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 2-MER 2YR Rainfall=3.31"

Area (ac)	CN	Description
0.350	98	Roofs, HSG A
0.193	98	Roofs, HSG B
* 0.049	98	Sidewalks, HSG A
* 0.003	98	Sidewalks, HSG B
0.013	74	>75% Grass cover, Good, HSG C
0.024	61	>75% Grass cover, Good, HSG B
0.114	39	>75% Grass cover, Good, HSG A
0.746	87	Weighted Average
0.151	46	20.24% Pervious Area
0.595	98	79.76% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PA-11: PA-11**

Hydrograph



**Summary for Subcatchment PA-12: PA-12**

Runoff = 0.61 cfs @ 12.15 hrs, Volume= 0.052 af, Depth= 1.38"

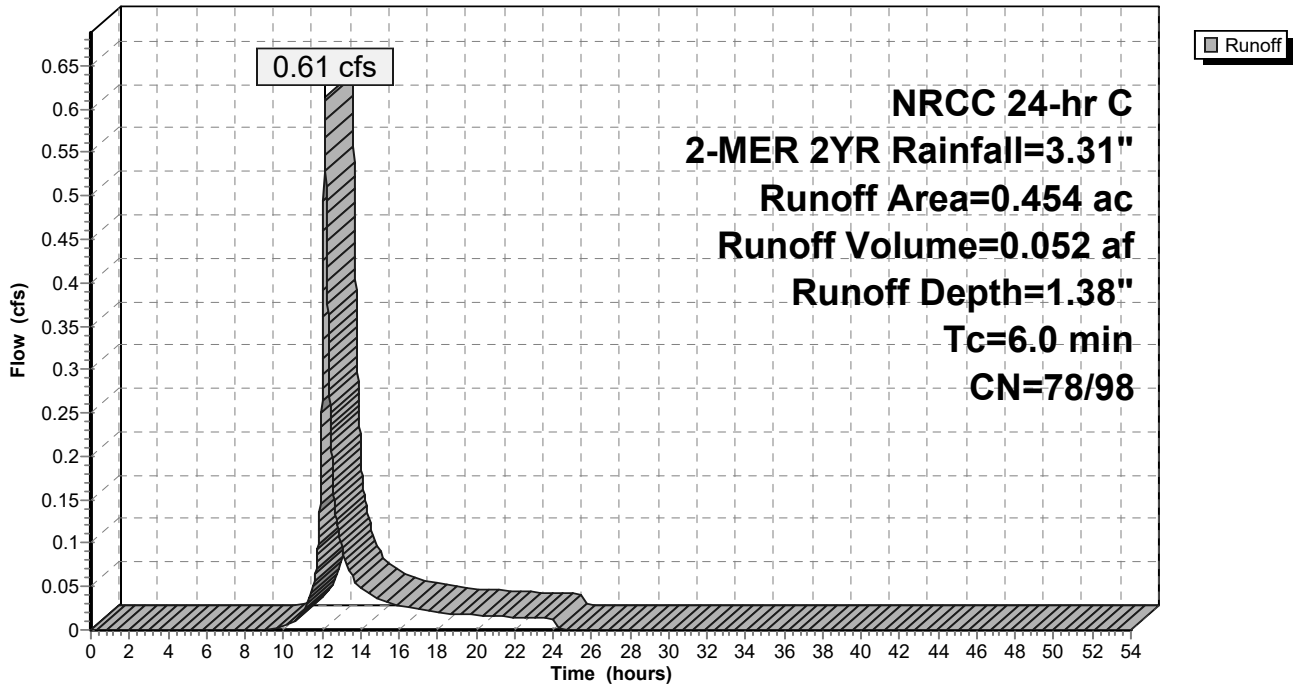
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 2-MER 2YR Rainfall=3.31"

Area (ac)	CN	Description
0.039	61	>75% Grass cover, Good, HSG B
0.006	98	Paved parking, HSG D
0.409	80	>75% Grass cover, Good, HSG D
0.454	79	Weighted Average
0.448	78	98.68% Pervious Area
0.006	98	1.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PA-12: PA-12**

Hydrograph





**Summary for Subcatchment PA-2: PA-2**

Runoff = 0.11 cfs @ 12.14 hrs, Volume= 0.010 af, Depth= 2.04"

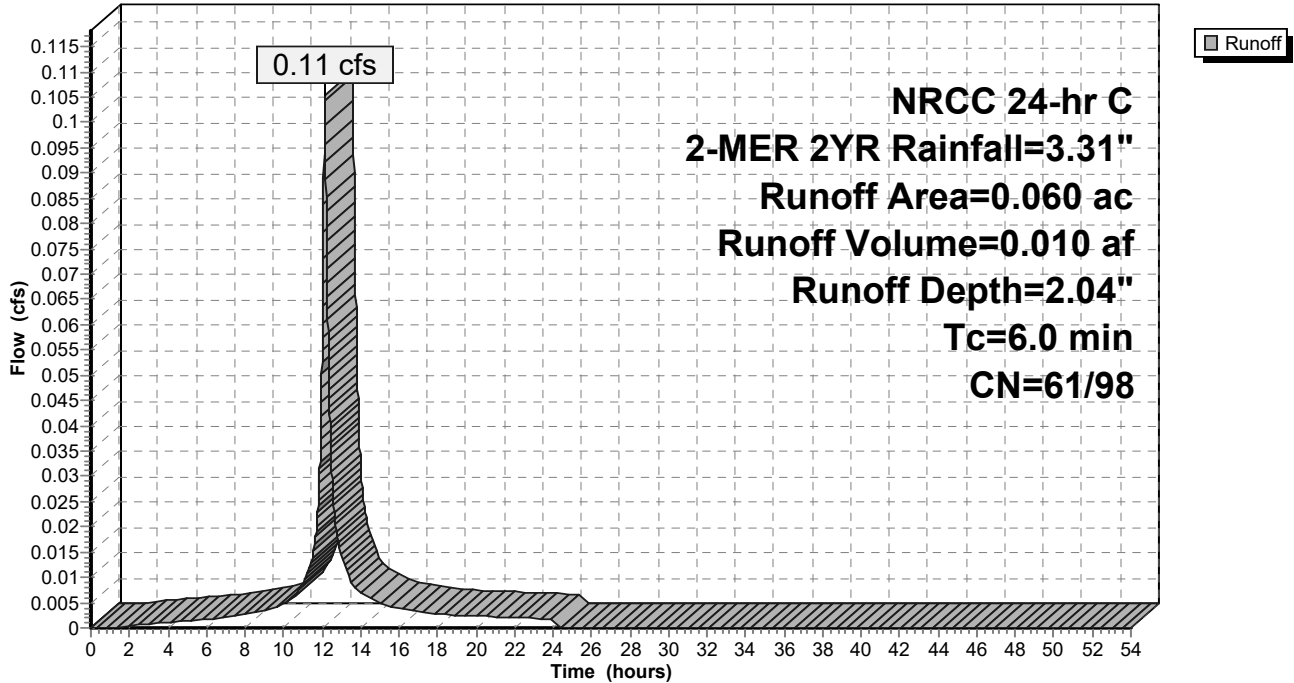
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 2-MER 2YR Rainfall=3.31"

Area (ac)	CN	Description
* 0.018	98	Sidewalks, HSG A
* 0.018	98	Sidewalks, HSG B
0.024	61	>75% Grass cover, Good, HSG B
0.060	83	Weighted Average
0.024	61	40.00% Pervious Area
0.036	98	60.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PA-2: PA-2**

Hydrograph



**Summary for Subcatchment PA-3: PA-3**

Runoff = 1.99 cfs @ 12.14 hrs, Volume= 0.180 af, Depth= 2.77"

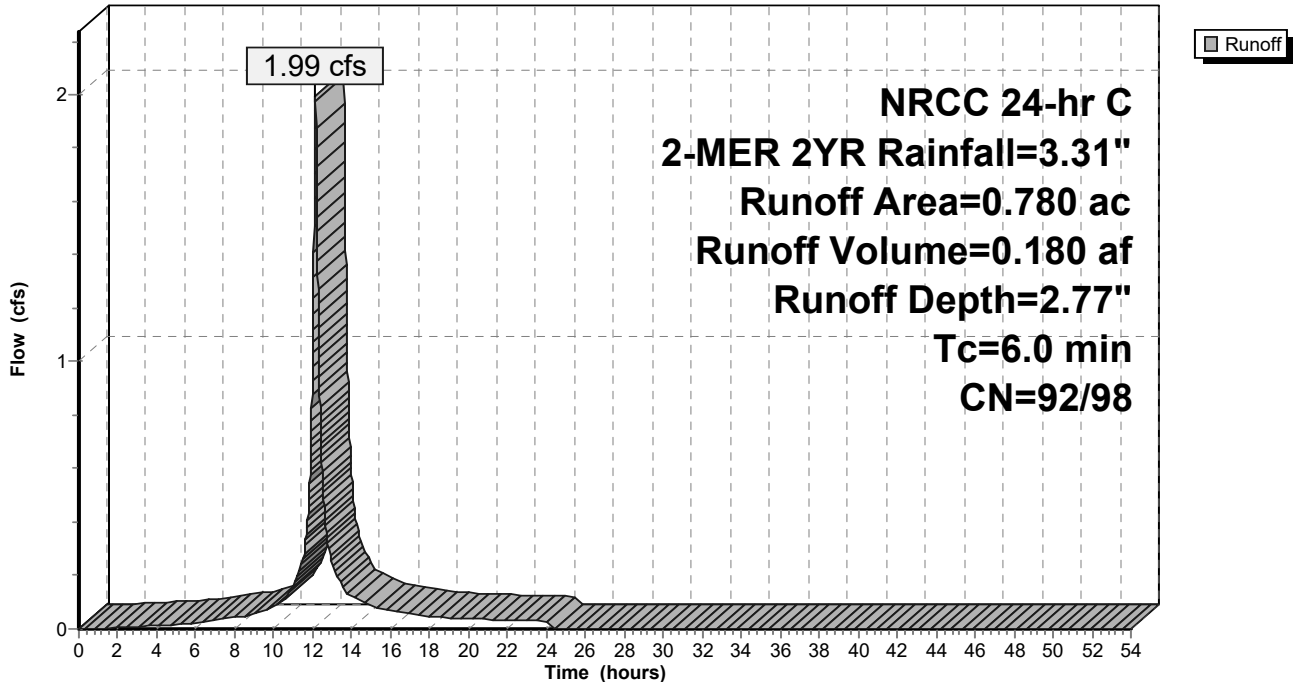
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 2-MER 2YR Rainfall=3.31"

Area (ac)	CN	Description
0.019	98	Roofs, HSG A
0.361	98	Roofs, HSG C
* 0.020	98	Sidewalks HSG C
0.100	74	>75% Grass cover, Good, HSG C
0.280	98	Unconnected roofs, HSG C
0.780	95	Weighted Average
0.380	92	48.72% Pervious Area
0.400	98	51.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PA-3: PA-3**

Hydrograph



**Summary for Subcatchment PA-4: PA-4**

Runoff = 2.83 cfs @ 12.14 hrs, Volume= 0.267 af, Depth= 2.63"

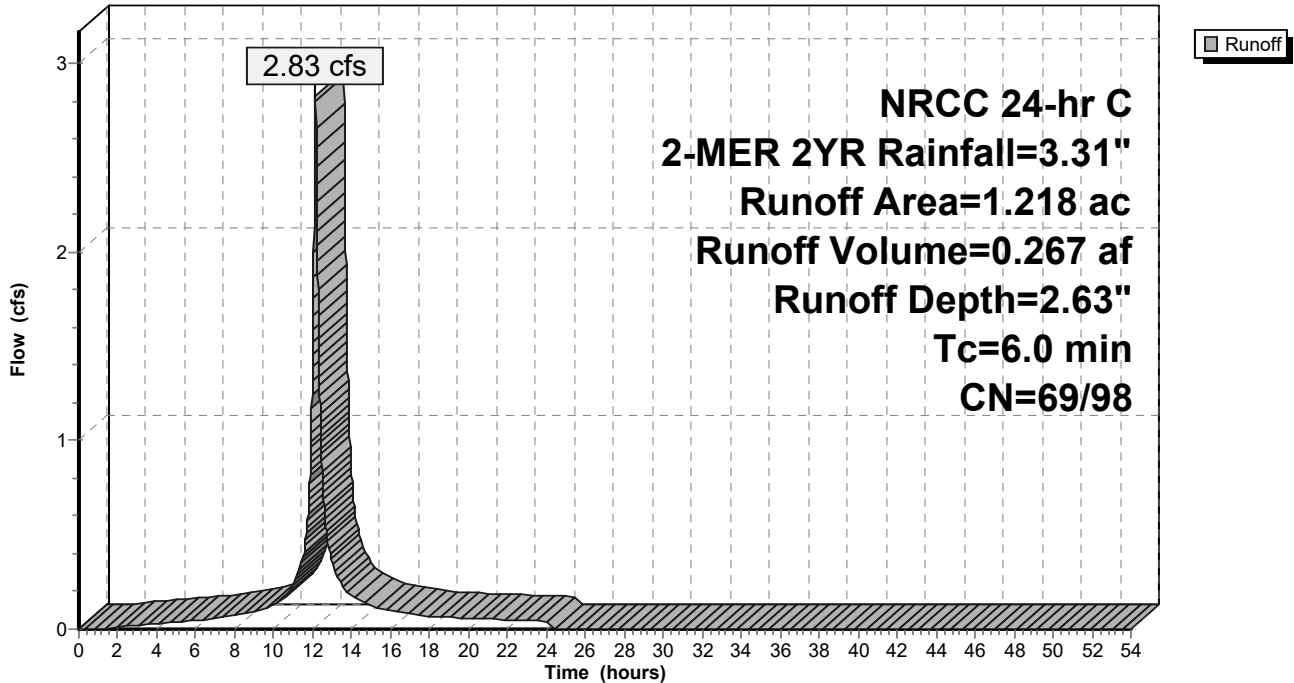
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 2-MER 2YR Rainfall=3.31"

Area (ac)	CN	Description
0.314	98	Paved parking, HSG A
0.112	98	Paved parking, HSG B
0.450	98	Paved parking, HSG C
* 0.017	98	Sidewalks, HSG A
* 0.079	98	Sidewalks, HSG C
0.152	74	>75% Grass cover, Good, HSG C
0.094	61	>75% Grass cover, Good, HSG B
1.218	92	Weighted Average
0.246	69	20.20% Pervious Area
0.972	98	79.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PA-4: PA-4**

Hydrograph



**Summary for Subcatchment PA-5: PA-5**

Runoff = 2.28 cfs @ 12.14 hrs, Volume= 0.216 af, Depth= 2.81"

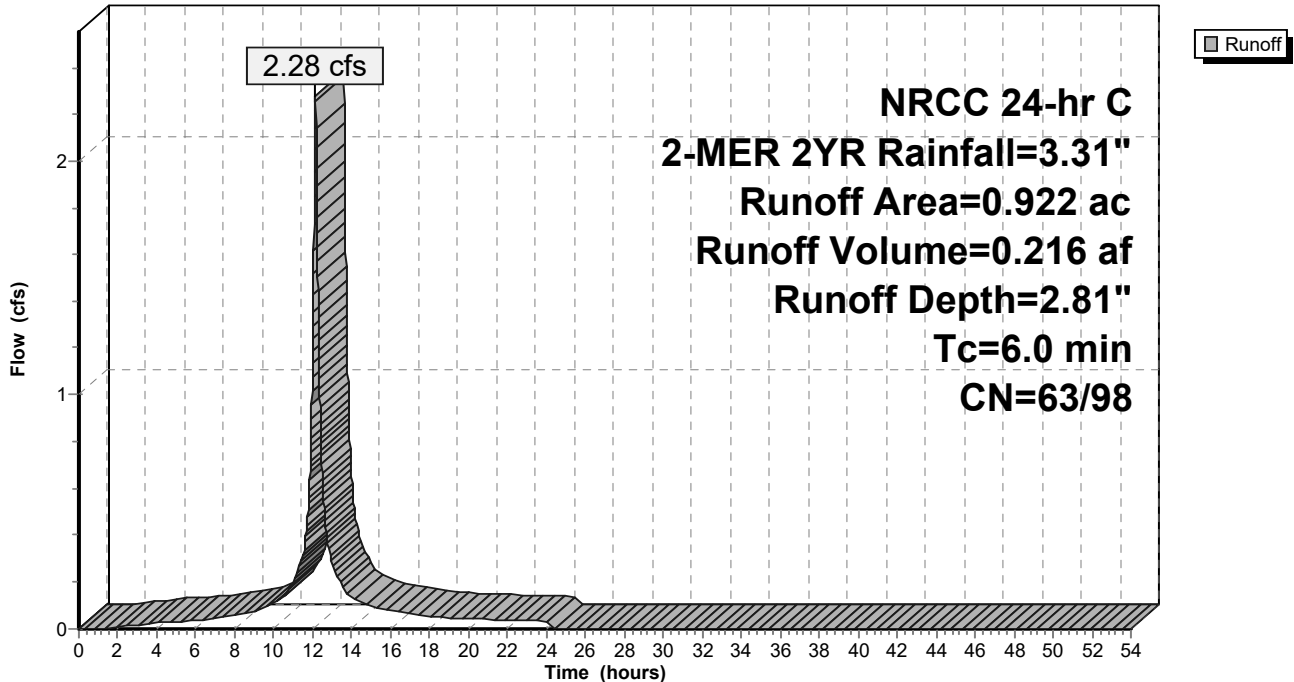
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 2-MER 2YR Rainfall=3.31"

Area (ac)	CN	Description
0.626	98	Paved parking, HSG B
* 0.007	98	Sidewalks, HSG B
0.189	98	Paved parking, HSG C
0.015	74	>75% Grass cover, Good, HSG C
0.085	61	>75% Grass cover, Good, HSG B
0.922	94	Weighted Average
0.100	63	10.85% Pervious Area
0.822	98	89.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PA-5: PA-5**

Hydrograph



**Summary for Subcatchment PA-6-ROW: PA-6-ROW**

Runoff = 0.30 cfs @ 12.14 hrs, Volume= 0.029 af, Depth= 2.86"

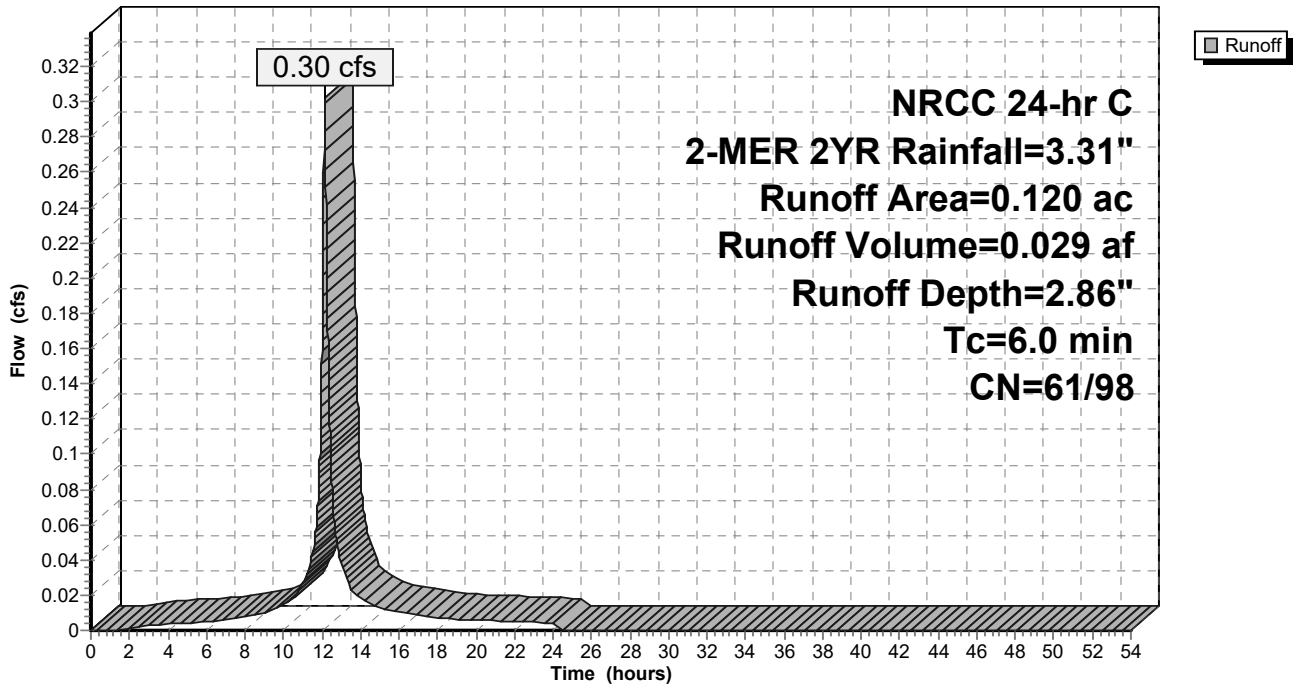
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 2-MER 2YR Rainfall=3.31"

Area (ac)	CN	Description
0.110	98	Paved parking, HSG A
0.010	61	>75% Grass cover, Good, HSG B
0.120	95	Weighted Average
0.010	61	8.33% Pervious Area
0.110	98	91.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PA-6-ROW: PA-6-ROW**

Hydrograph



**Summary for Subcatchment PA-7-ROW: PA-7-ROW**

Runoff = 0.26 cfs @ 12.14 hrs, Volume= 0.025 af, Depth= 2.72"

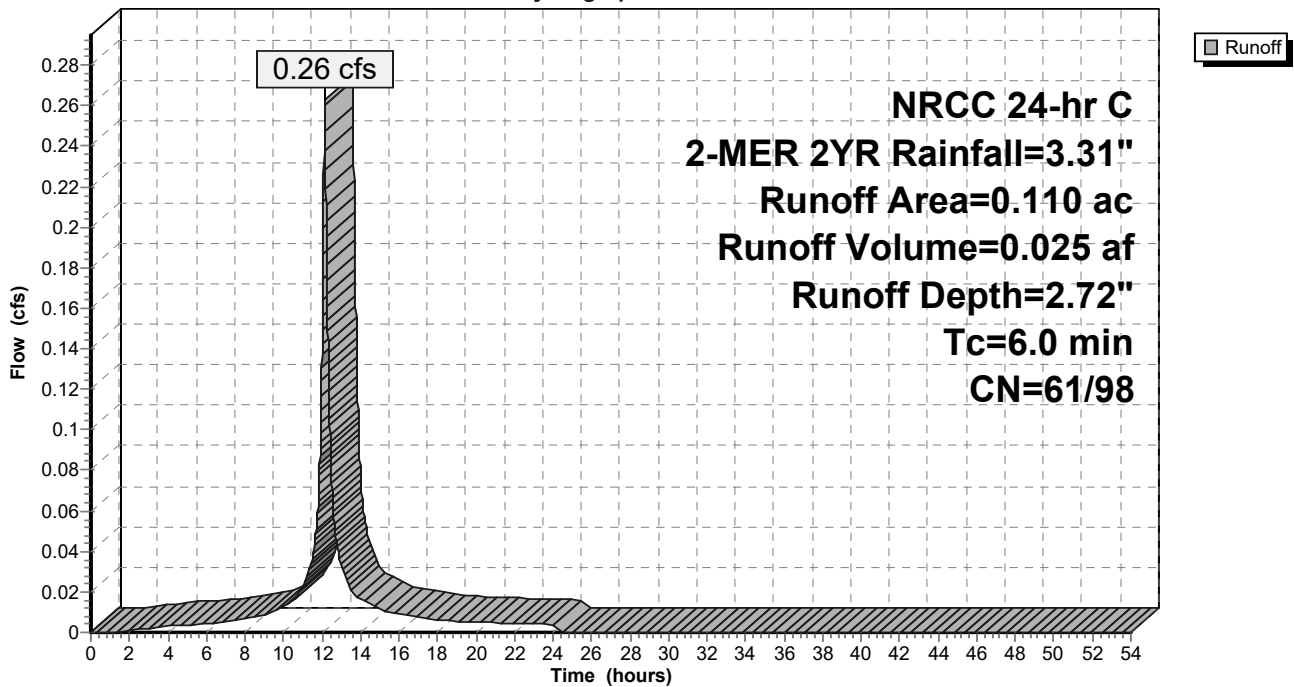
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 2-MER 2YR Rainfall=3.31"

Area (ac)	CN	Description
0.095	98	Paved parking, HSG A
0.015	61	>75% Grass cover, Good, HSG B
0.110	93	Weighted Average
0.015	61	13.64% Pervious Area
0.095	98	86.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PA-7-ROW: PA-7-ROW**

Hydrograph



### Summary for Reach RCP\*: 36" RCP

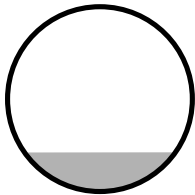
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 52.966 ac, 32.55% Impervious, Inflow Depth = 1.37" for 2-MER 2YR event  
 Inflow = 22.45 cfs @ 12.51 hrs, Volume= 6.026 af  
 Outflow = 22.45 cfs @ 12.51 hrs, Volume= 6.026 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs  
 Max. Velocity= 20.50 fps, Min. Travel Time= 0.0 min  
 Avg. Velocity= 9.11 fps, Avg. Travel Time= 0.0 min

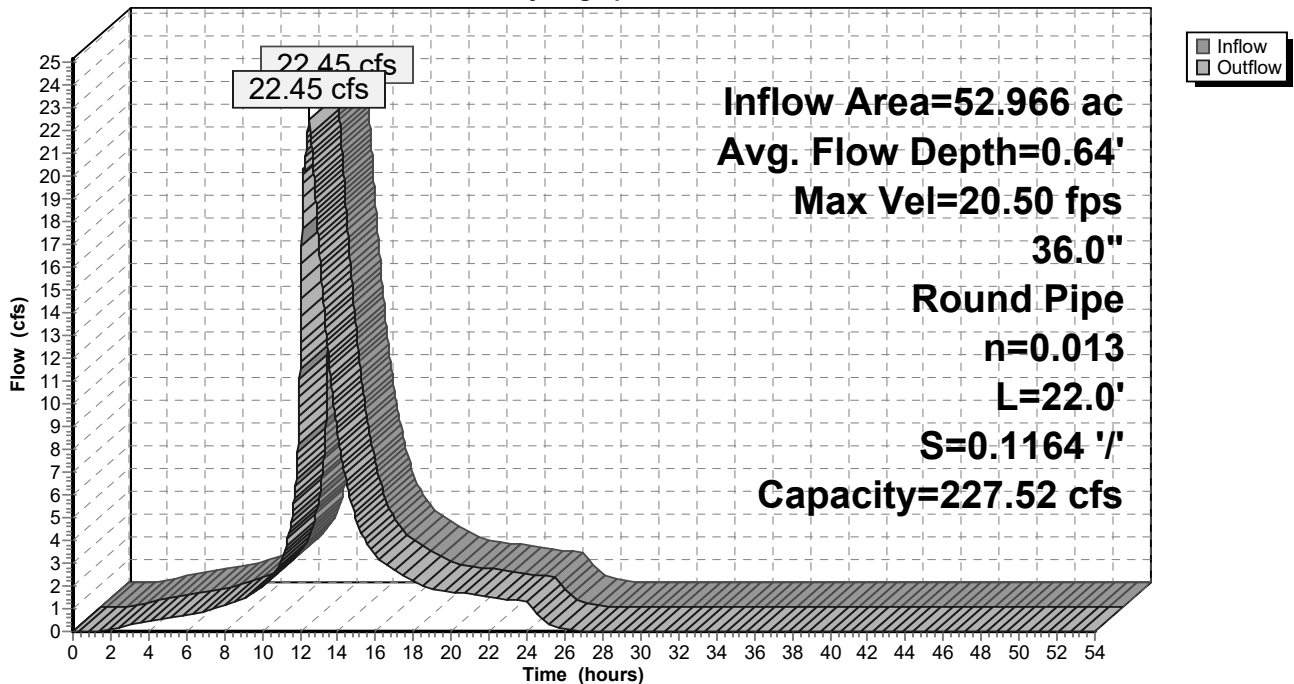
Peak Storage= 24 cf @ 12.51 hrs  
 Average Depth at Peak Storage= 0.64' , Surface Width= 2.45'  
 Bank-Full Depth= 3.00' Flow Area= 7.1 sf, Capacity= 227.52 cfs

36.0" Round Pipe  
 n= 0.013 Concrete pipe, bends & connections  
 Length= 22.0' Slope= 0.1164 '/'  
 Inlet Invert= 80.76', Outlet Invert= 78.20'



### Reach RCP\*: 36" RCP

Hydrograph



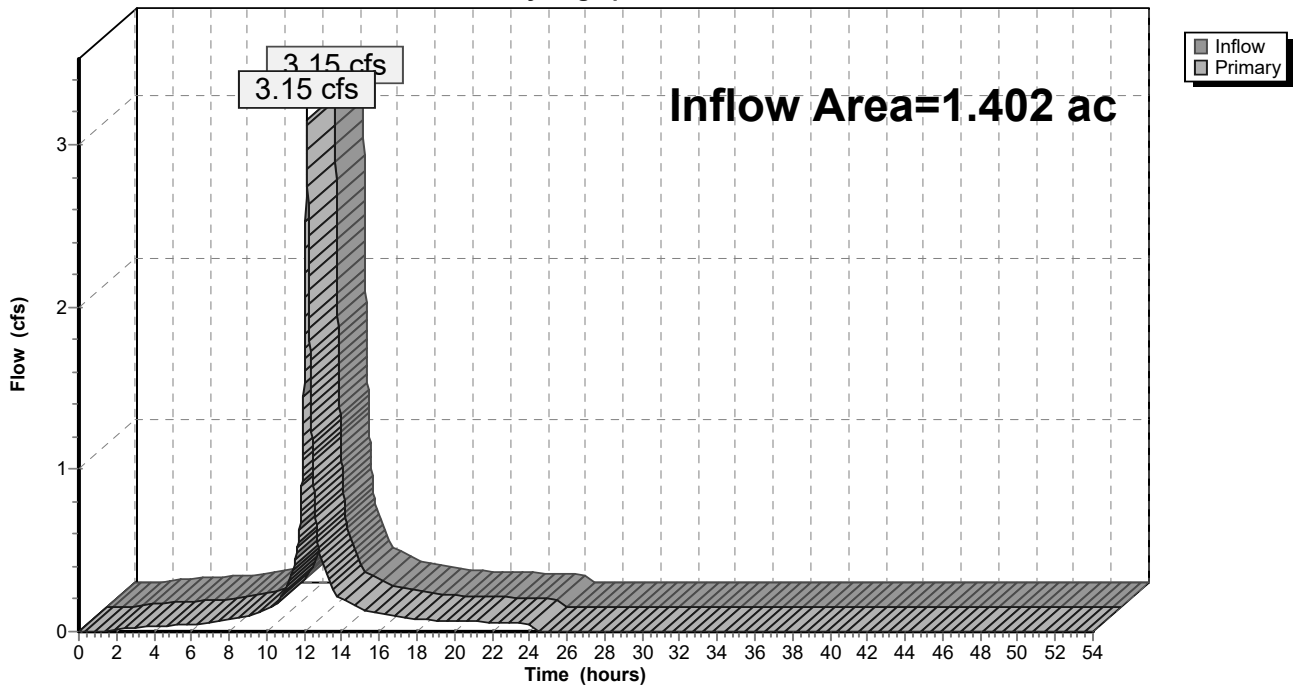
### Summary for Link MTD-A1: MTD-A1

Inflow Area = 1.402 ac, 69.33% Impervious, Inflow Depth = 2.51" for 2-MER 2YR event  
Inflow = 3.15 cfs @ 12.14 hrs, Volume= 0.293 af  
Primary = 3.15 cfs @ 12.14 hrs, Volume= 0.293 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link MTD-A1: MTD-A1

Hydrograph



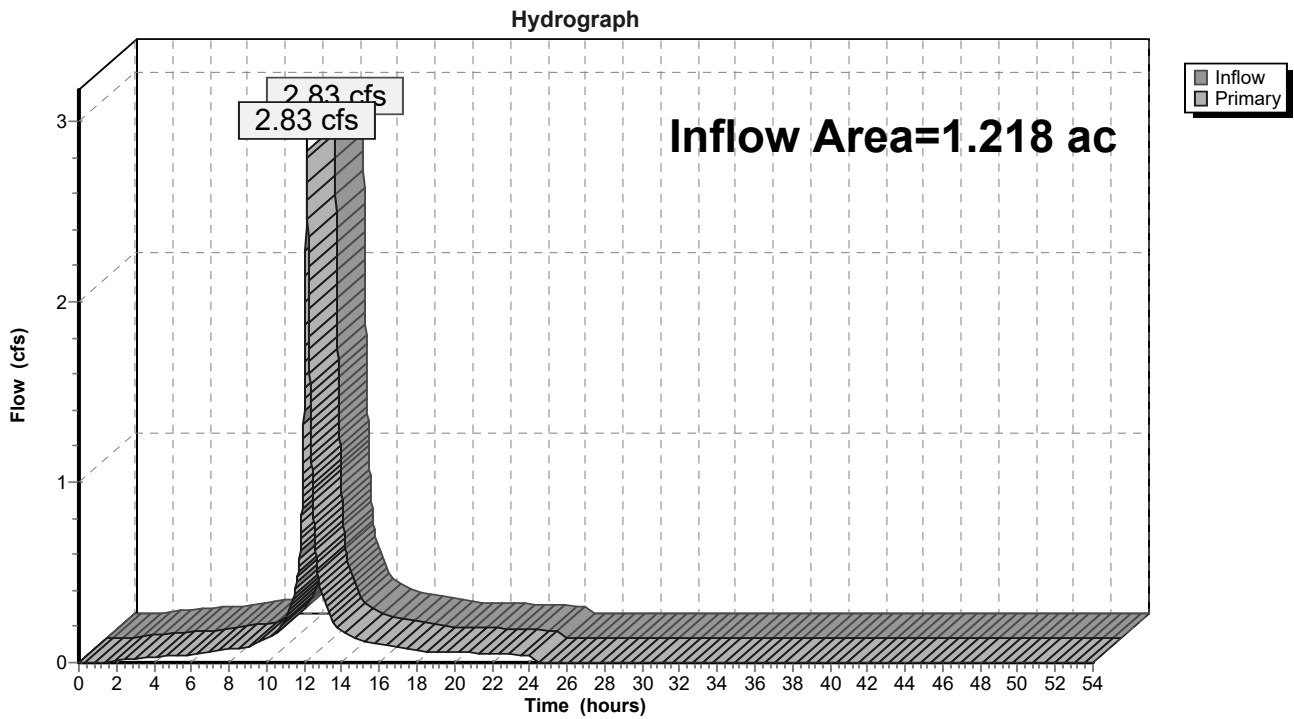


### Summary for Link MTD-A2: MTD-A2

Inflow Area = 1.218 ac, 79.80% Impervious, Inflow Depth = 2.63" for 2-MER 2YR event  
Inflow = 2.83 cfs @ 12.14 hrs, Volume= 0.267 af  
Primary = 2.83 cfs @ 12.14 hrs, Volume= 0.267 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link MTD-A2: MTD-A2



### Summary for Link POA-A1\*: POA-A1\* (Rocky Brook HW)

[62] Hint: Exceeded Reach RCP\* OUTLET depth by 1.80' @ 0.00 hrs

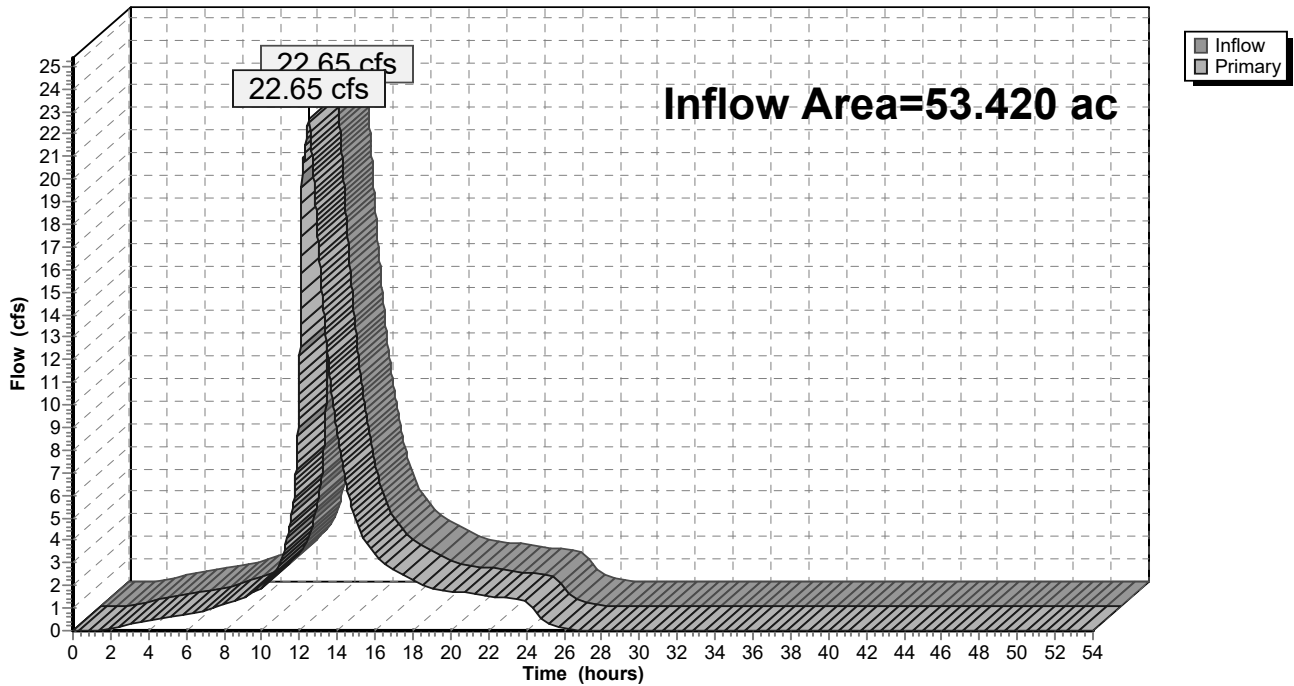
Inflow Area = 53.420 ac, 32.28% Impervious, Inflow Depth = 1.37" for 2-MER 2YR event  
Inflow = 22.65 cfs @ 12.51 hrs, Volume= 6.078 af  
Primary = 22.65 cfs @ 12.51 hrs, Volume= 6.078 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

Fixed water surface Elevation= 80.00'

### Link POA-A1\*: POA-A1\* (Rocky Brook HW)

Hydrograph



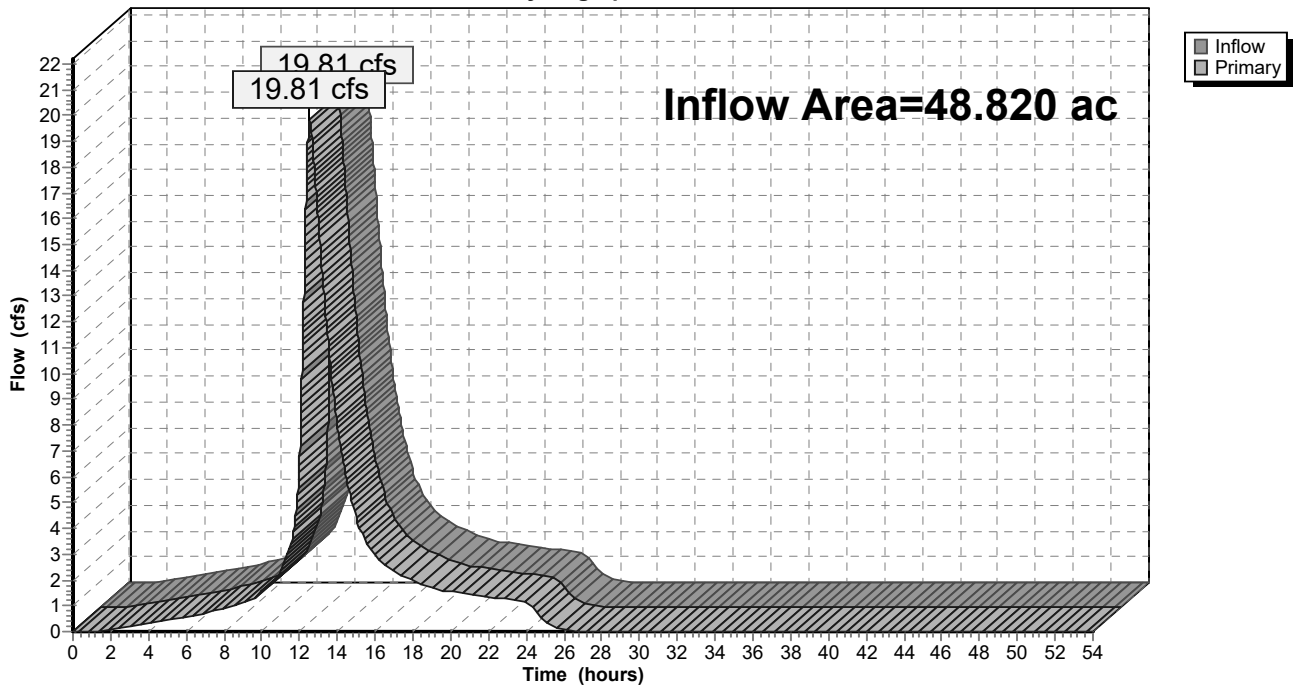
### Summary for Link POA-A1A\*: POA-A1A\*

Inflow Area = 48.820 ac, 29.29% Impervious, Inflow Depth = 1.26" for 2-MER 2YR event  
Inflow = 19.81 cfs @ 12.52 hrs, Volume= 5.133 af  
Primary = 19.81 cfs @ 12.52 hrs, Volume= 5.133 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-A1A\*: POA-A1A\*

Hydrograph



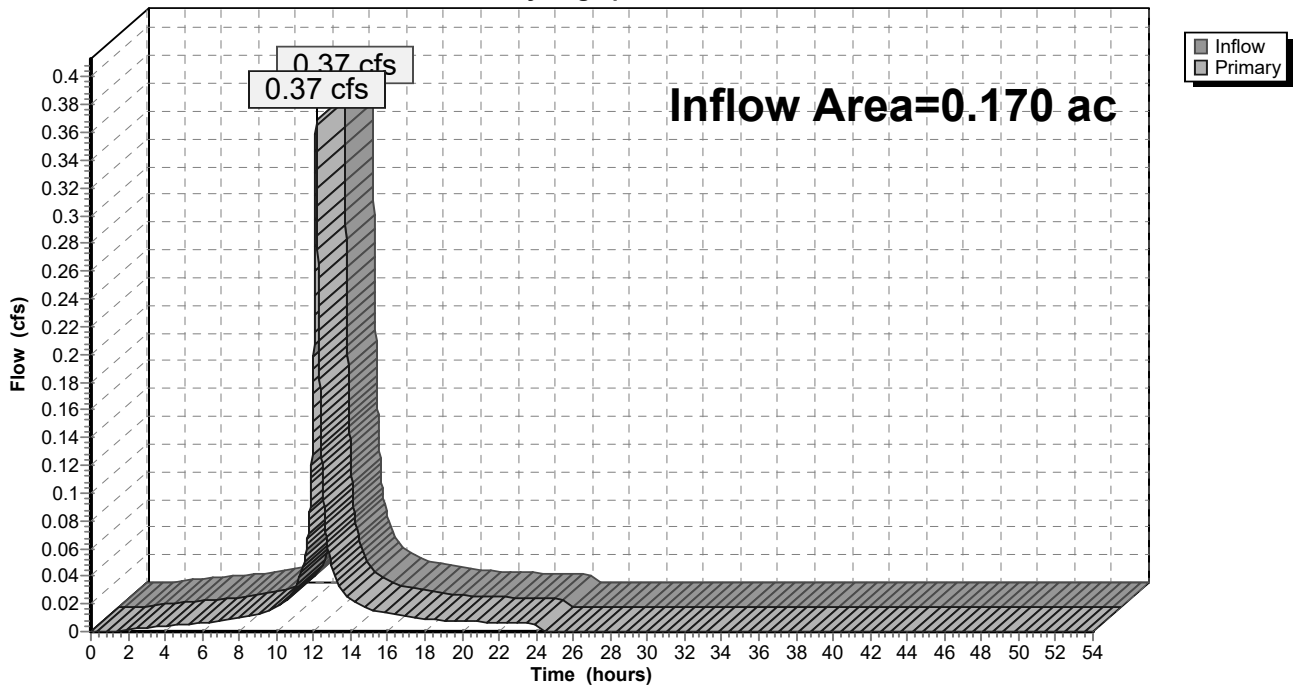
### Summary for Link POA-A2\*: POA-A2\* (BANK ST)

Inflow Area = 0.170 ac, 77.06% Impervious, Inflow Depth = 2.48" for 2-MER 2YR event  
Inflow = 0.37 cfs @ 12.14 hrs, Volume= 0.035 af  
Primary = 0.37 cfs @ 12.14 hrs, Volume= 0.035 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-A2\*: POA-A2\* (BANK ST)

Hydrograph



Time span=0.00-54.00 hrs, dt=0.01 hrs, 5401 points  
 Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious  
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

<b>Subcatchment EA-10-OS*: EA-10-OS</b>	Runoff Area=0.480 ac 31.25% Impervious Runoff Depth=3.43" Tc=6.0 min CN=79/98 Runoff=1.55 cfs 0.137 af
<b>Subcatchment EA-8-OS*: EA-8-OS</b>	Runoff Area=46.420 ac 30.00% Impervious Runoff Depth=2.40" Flow Length=2,965' Tc=36.1 min CN=61/98 Runoff=38.27 cfs 9.291 af
<b>Subcatchment EA-9-OS*: EA-9-OS</b>	Runoff Area=2.220 ac 11.26% Impervious Runoff Depth=2.29" Flow Length=500' Tc=6.7 min CN=69/98 Runoff=4.63 cfs 0.423 af
<b>Subcatchment PA-1: PA-1</b>	Runoff Area=0.060 ac 21.67% Impervious Runoff Depth=1.91" Tc=6.0 min CN=57/98 Runoff=0.10 cfs 0.010 af
<b>Subcatchment PA-11: PA-11</b>	Runoff Area=0.746 ac 79.76% Impervious Runoff Depth=3.92" Tc=6.0 min CN=46/98 Runoff=2.50 cfs 0.243 af
<b>Subcatchment PA-12: PA-12</b>	Runoff Area=0.454 ac 1.32% Impervious Runoff Depth=2.76" Tc=6.0 min CN=78/98 Runoff=1.25 cfs 0.104 af
<b>Subcatchment PA-2: PA-2</b>	Runoff Area=0.060 ac 60.00% Impervious Runoff Depth=3.42" Tc=6.0 min CN=61/98 Runoff=0.18 cfs 0.017 af
<b>Subcatchment PA-3: PA-3</b>	Runoff Area=0.780 ac 51.28% Impervious Runoff Depth=4.45" Tc=6.0 min CN=92/98 Runoff=3.13 cfs 0.290 af
<b>Subcatchment PA-4: PA-4</b>	Runoff Area=1.218 ac 79.80% Impervious Runoff Depth=4.22" Tc=6.0 min CN=69/98 Runoff=4.52 cfs 0.428 af
<b>Subcatchment PA-5: PA-5</b>	Runoff Area=0.922 ac 89.15% Impervious Runoff Depth=4.43" Tc=6.0 min CN=63/98 Runoff=3.56 cfs 0.340 af
<b>Subcatchment PA-6-ROW: PA-6-ROW</b>	Runoff Area=0.120 ac 91.67% Impervious Runoff Depth=4.50" Tc=6.0 min CN=61/98 Runoff=0.47 cfs 0.045 af
<b>Subcatchment PA-7-ROW: PA-7-ROW</b>	Runoff Area=0.110 ac 86.36% Impervious Runoff Depth=4.32" Tc=6.0 min CN=61/98 Runoff=0.41 cfs 0.040 af
<b>Reach RCP*: 36" RCP</b>	Avg. Flow Depth=0.90' Max Vel=24.93 fps Inflow=44.20 cfs 11.207 af 36.0" Round Pipe n=0.013 L=22.0' S=0.1164 '/ Capacity=227.52 cfs Outflow=44.20 cfs 11.207 af
<b>Link MTD-A1: MTD-A1</b>	Inflow=5.11 cfs 0.478 af Primary=5.11 cfs 0.478 af
<b>Link MTD-A2: MTD-A2</b>	Inflow=4.52 cfs 0.428 af Primary=4.52 cfs 0.428 af
<b>Link POA-A1*: POA-A1* (Rocky Brook HW)</b>	Inflow=44.58 cfs 11.311 af Primary=44.58 cfs 11.311 af

**200811\_Model**

*NRCC 24-hr C 3-MER 10YR Rainfall=5.02"*

Prepared by Maser Consulting

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**Link POA-A1A\*: POA-A1A\***

Inflow=40.03 cfs 9.769 af  
Primary=40.03 cfs 9.769 af

**Link POA-A2\*: POA-A2\* (BANK ST)**

Inflow=0.59 cfs 0.057 af  
Primary=0.59 cfs 0.057 af

**Total Runoff Area = 53.590 ac Runoff Volume = 11.368 af Average Runoff Depth = 2.55"  
67.58% Pervious = 36.215 ac 32.42% Impervious = 17.375 ac**

**Summary for Subcatchment EA-10-OS\*: EA-10-OS**

Runoff = 1.55 cfs @ 12.14 hrs, Volume= 0.137 af, Depth= 3.43"

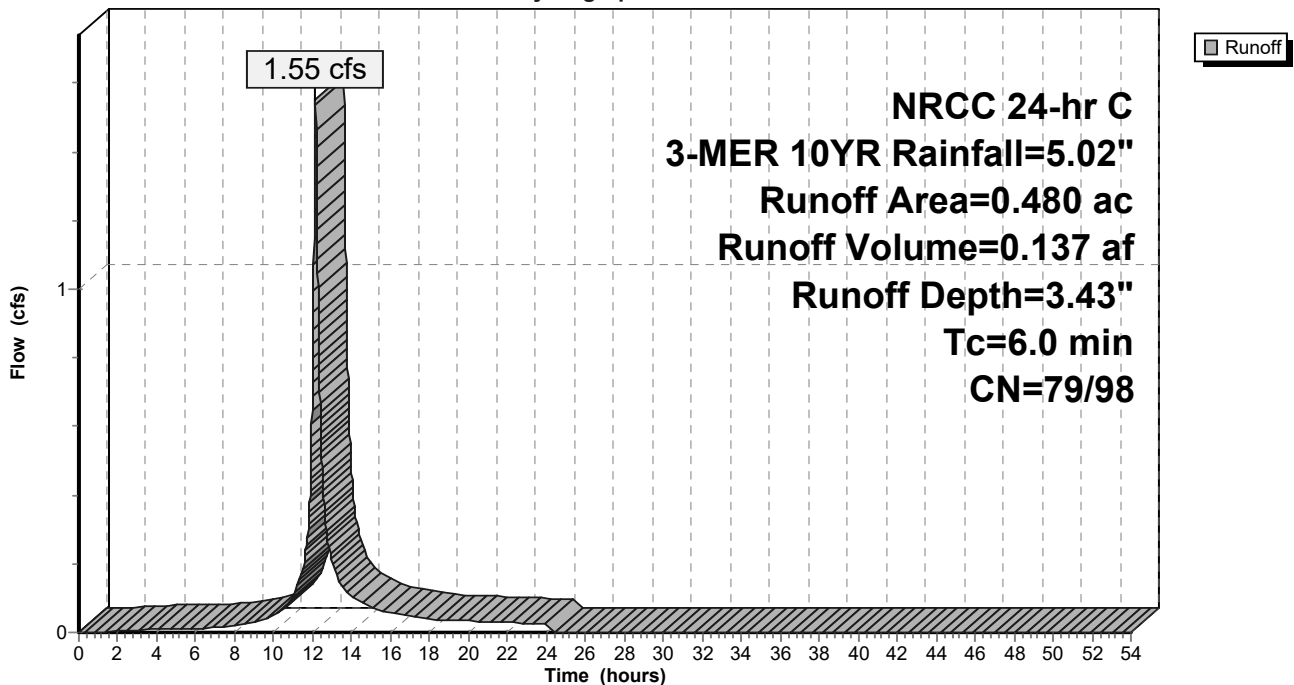
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 3-MER 10YR Rainfall=5.02"

Area (ac)	CN	Description
0.150	98	Roofs, HSG C
0.070	98	Unconnected pavement, HSG C
0.220	74	>75% Grass cover, Good, HSG C
0.040	72	Woods/grass comb., Good, HSG C
0.480	85	Weighted Average
0.330	79	68.75% Pervious Area
0.150	98	31.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EA-10-OS\*: EA-10-OS**

Hydrograph



**Summary for Subcatchment EA-8-OS\*: EA-8-OS**

Runoff = 38.27 cfs @ 12.52 hrs, Volume= 9.291 af, Depth= 2.40"

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 3-MER 10YR Rainfall=5.02"

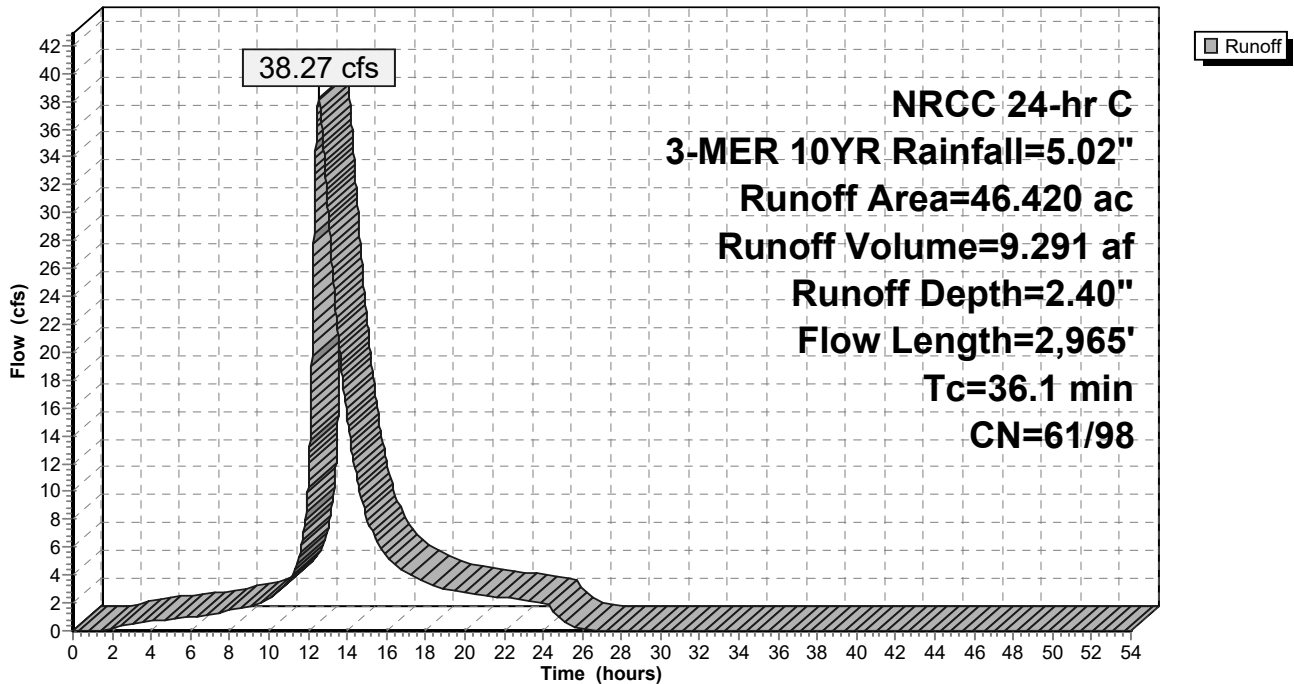
Area (ac)	CN	Description
46.420	72	1/3 acre lots, 30% imp, HSG B
32.494	61	70.00% Pervious Area
13.926	98	30.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.7	100	0.0100	0.13		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.31"
3.9	370	0.0060	1.57		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
17.5	2,100		2.00		<b>Direct Entry, Pipe Flow</b>
2.0	395	0.0170	3.22	57.93	<b>Trap/Vee/Rect Channel Flow,</b> Bot.W=4.50' D=2.00' Z= 2.0 & 2.5 ' Top.W=13.50' n= 0.070
36.1	2,965	Total			

**Subcatchment EA-8-OS\*: EA-8-OS**

Hydrograph





**Summary for Subcatchment EA-9-OS\*: EA-9-0S**

Runoff = 4.63 cfs @ 12.15 hrs, Volume= 0.423 af, Depth= 2.29"

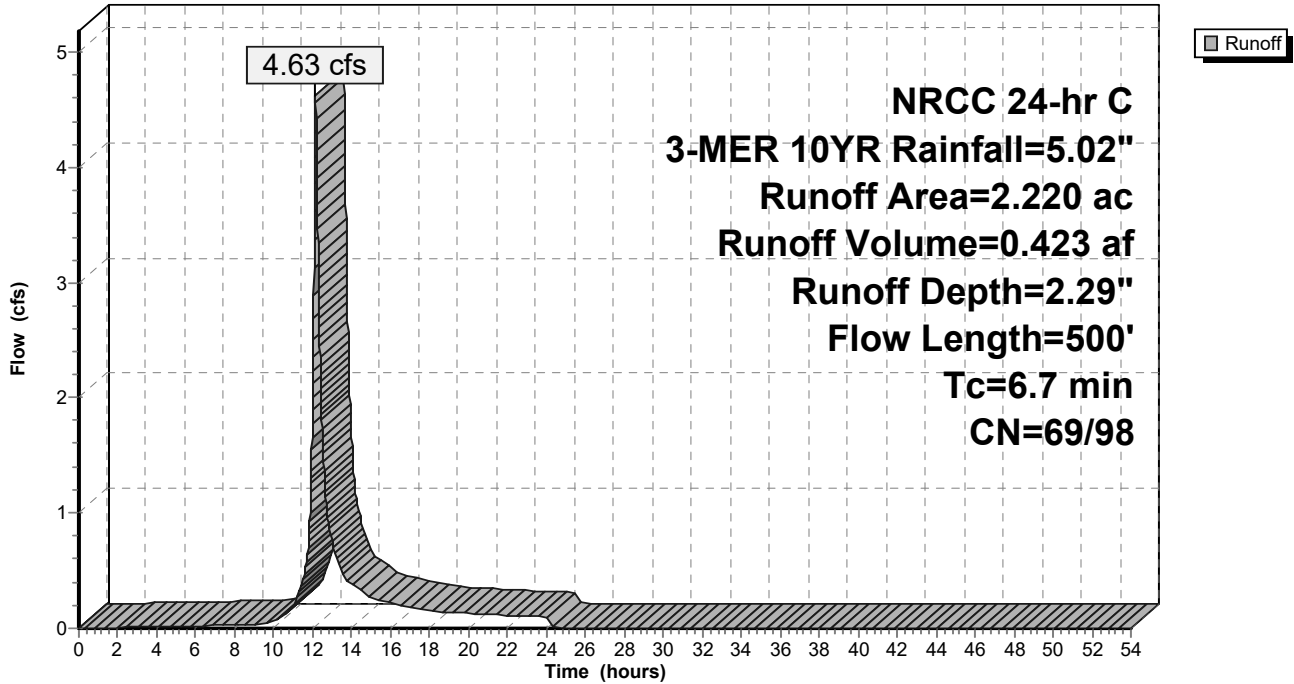
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 3-MER 10YR Rainfall=5.02"

Area (ac)	CN	Description
0.250	98	Roofs, HSG C
0.140	98	Unconnected pavement, HSG C
0.430	80	>75% Grass cover, Good, HSG D
0.870	61	>75% Grass cover, Good, HSG B
0.270	58	Woods/grass comb., Good, HSG B
0.050	79	Woods/grass comb., Good, HSG D
0.210	73	Brush, Good, HSG D
2.220	72	Weighted Average
1.970	69	88.74% Pervious Area
0.250	98	11.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	70	0.0900	0.29		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.31"
1.5	190	0.0900	2.10		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
1.2	240	0.0170	3.22	57.93	<b>Trap/Vee/Rect Channel Flow,</b> Bot.W=4.50' D=2.00' Z= 2.0 & 2.5 '/' Top.W=13.50' n= 0.070
6.7	500	Total			

Subcatchment EA-9-OS\*: EA-9-0S

Hydrograph



**Summary for Subcatchment PA-1: PA-1**

Runoff = 0.10 cfs @ 12.15 hrs, Volume= 0.010 af, Depth= 1.91"

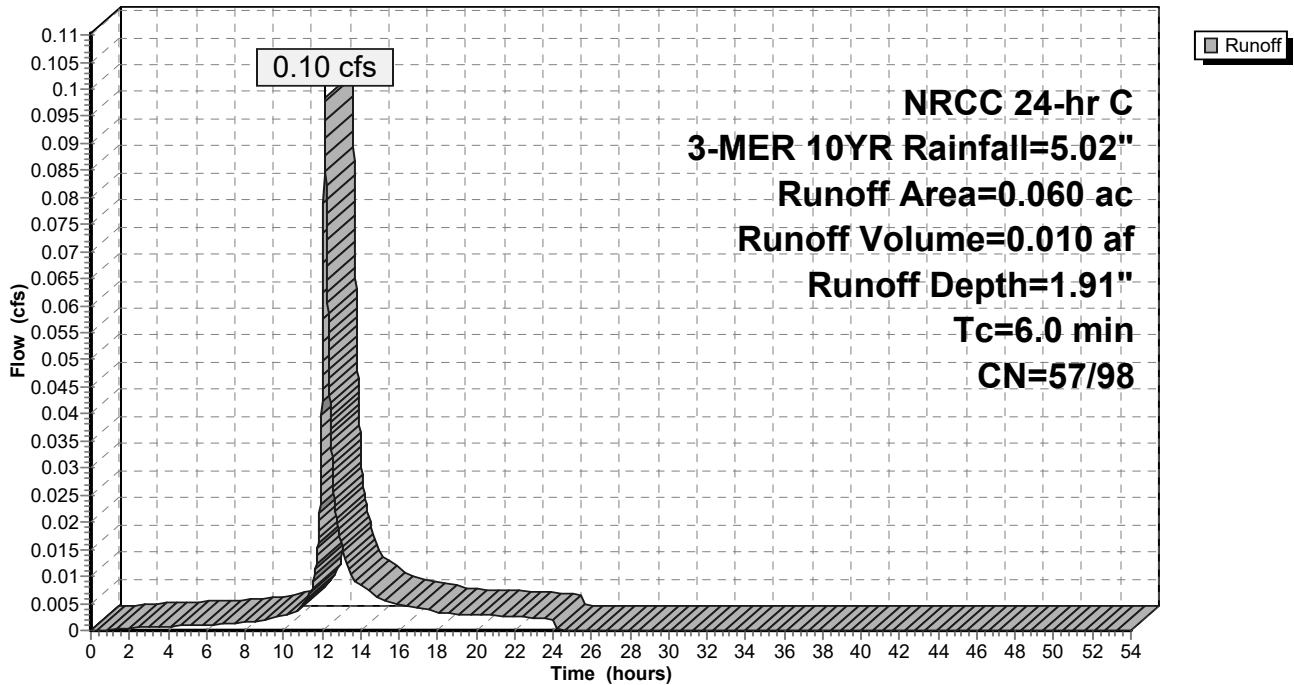
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 3-MER 10YR Rainfall=5.02"

Area (ac)	CN	Description
* 0.003	98	Sidewalks, HSG A
* 0.010	98	Sidewalks, HSG B
0.009	39	>75% Grass cover, Good, HSG A
0.038	61	>75% Grass cover, Good, HSG B
0.060	66	Weighted Average
0.047	57	78.33% Pervious Area
0.013	98	21.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PA-1: PA-1**

Hydrograph



**Summary for Subcatchment PA-11: PA-11**

Runoff = 2.50 cfs @ 12.14 hrs, Volume= 0.243 af, Depth= 3.92"

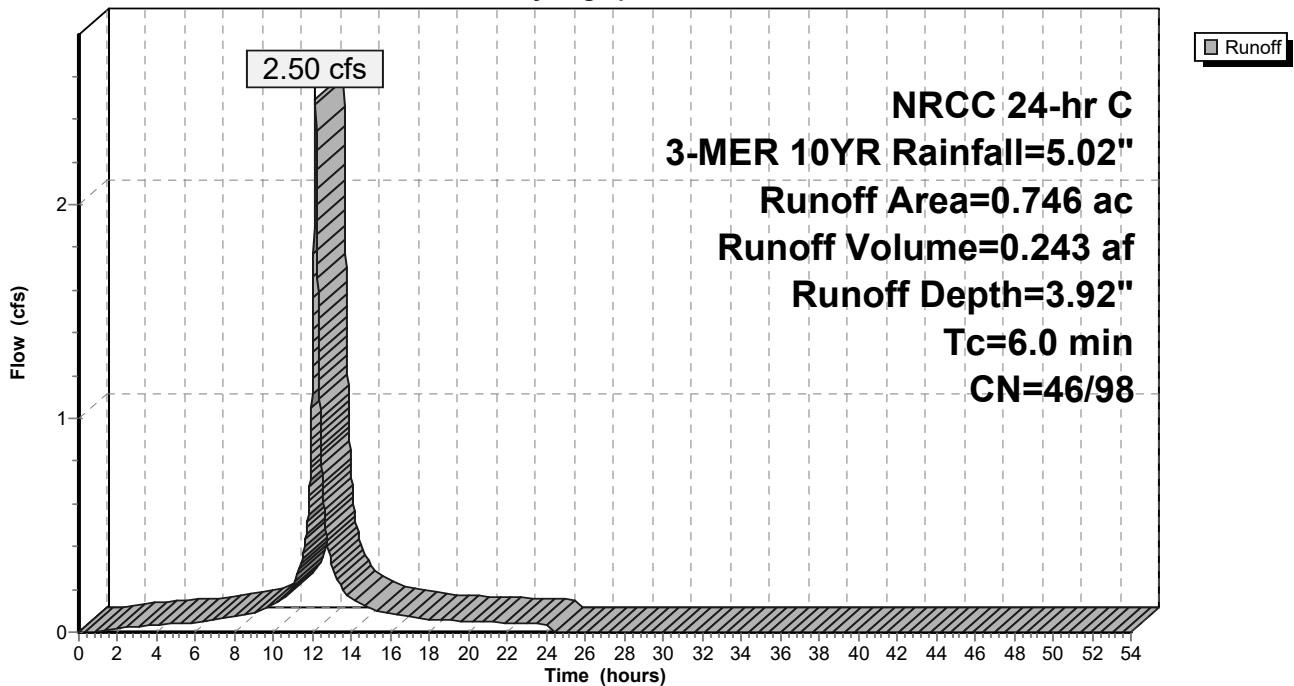
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 3-MER 10YR Rainfall=5.02"

Area (ac)	CN	Description
0.350	98	Roofs, HSG A
0.193	98	Roofs, HSG B
* 0.049	98	Sidewalks, HSG A
* 0.003	98	Sidewalks, HSG B
0.013	74	>75% Grass cover, Good, HSG C
0.024	61	>75% Grass cover, Good, HSG B
0.114	39	>75% Grass cover, Good, HSG A
0.746	87	Weighted Average
0.151	46	20.24% Pervious Area
0.595	98	79.76% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PA-11: PA-11**

Hydrograph



**Summary for Subcatchment PA-12: PA-12**

Runoff = 1.25 cfs @ 12.14 hrs, Volume= 0.104 af, Depth= 2.76"

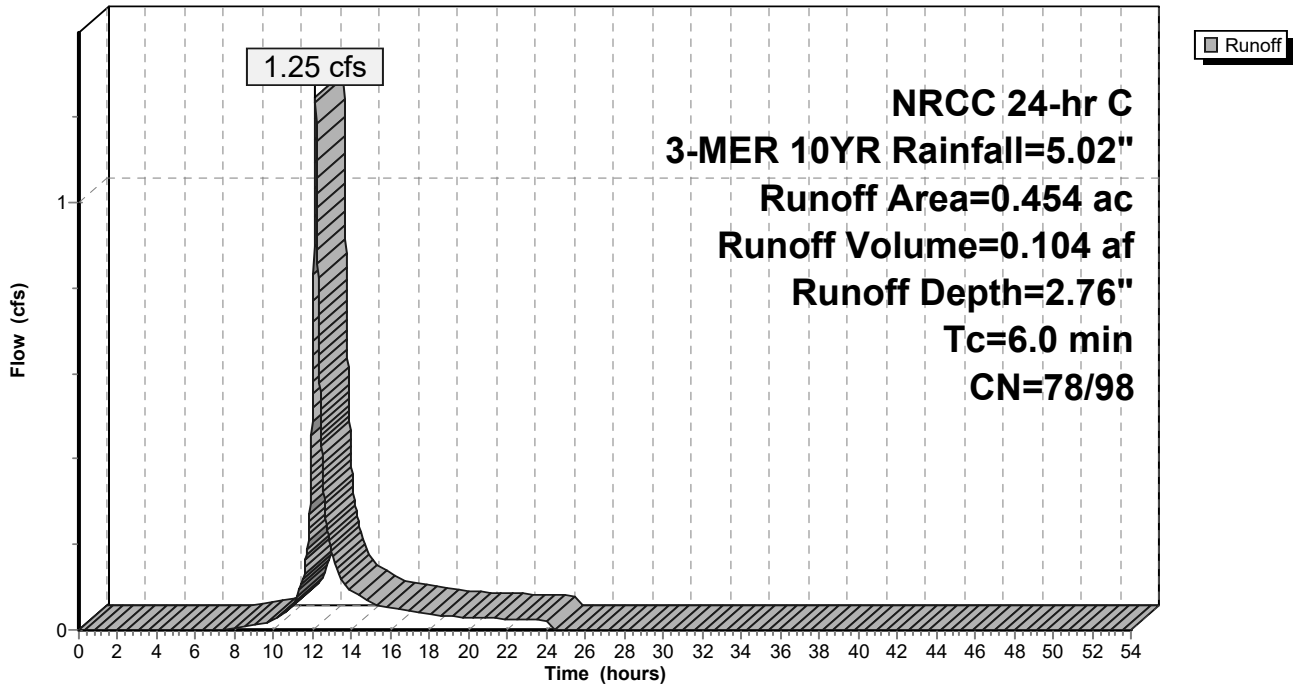
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 3-MER 10YR Rainfall=5.02"

Area (ac)	CN	Description
0.039	61	>75% Grass cover, Good, HSG B
0.006	98	Paved parking, HSG D
0.409	80	>75% Grass cover, Good, HSG D
0.454	79	Weighted Average
0.448	78	98.68% Pervious Area
0.006	98	1.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PA-12: PA-12**

Hydrograph



**Summary for Subcatchment PA-2: PA-2**

Runoff = 0.18 cfs @ 12.14 hrs, Volume= 0.017 af, Depth= 3.42"

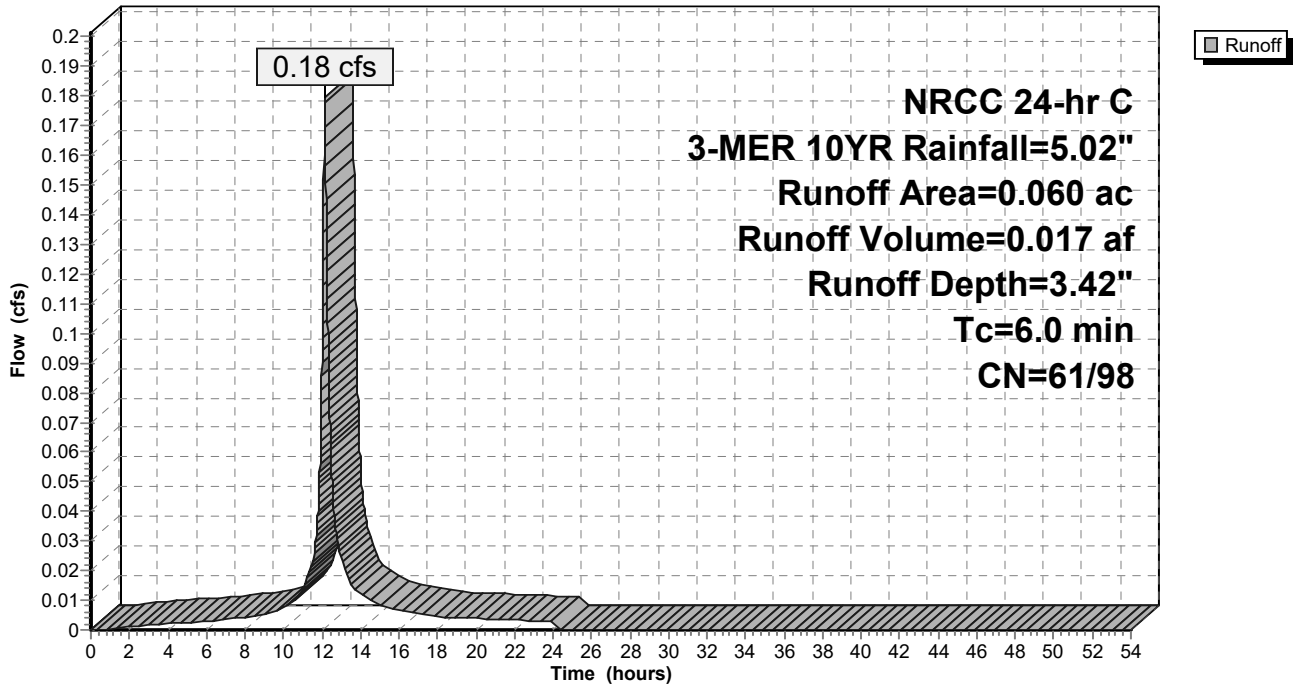
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 3-MER 10YR Rainfall=5.02"

Area (ac)	CN	Description
* 0.018	98	Sidewalks, HSG A
* 0.018	98	Sidewalks, HSG B
0.024	61	>75% Grass cover, Good, HSG B
0.060	83	Weighted Average
0.024	61	40.00% Pervious Area
0.036	98	60.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PA-2: PA-2**

Hydrograph



**Summary for Subcatchment PA-3: PA-3**

Runoff = 3.13 cfs @ 12.14 hrs, Volume= 0.290 af, Depth= 4.45"

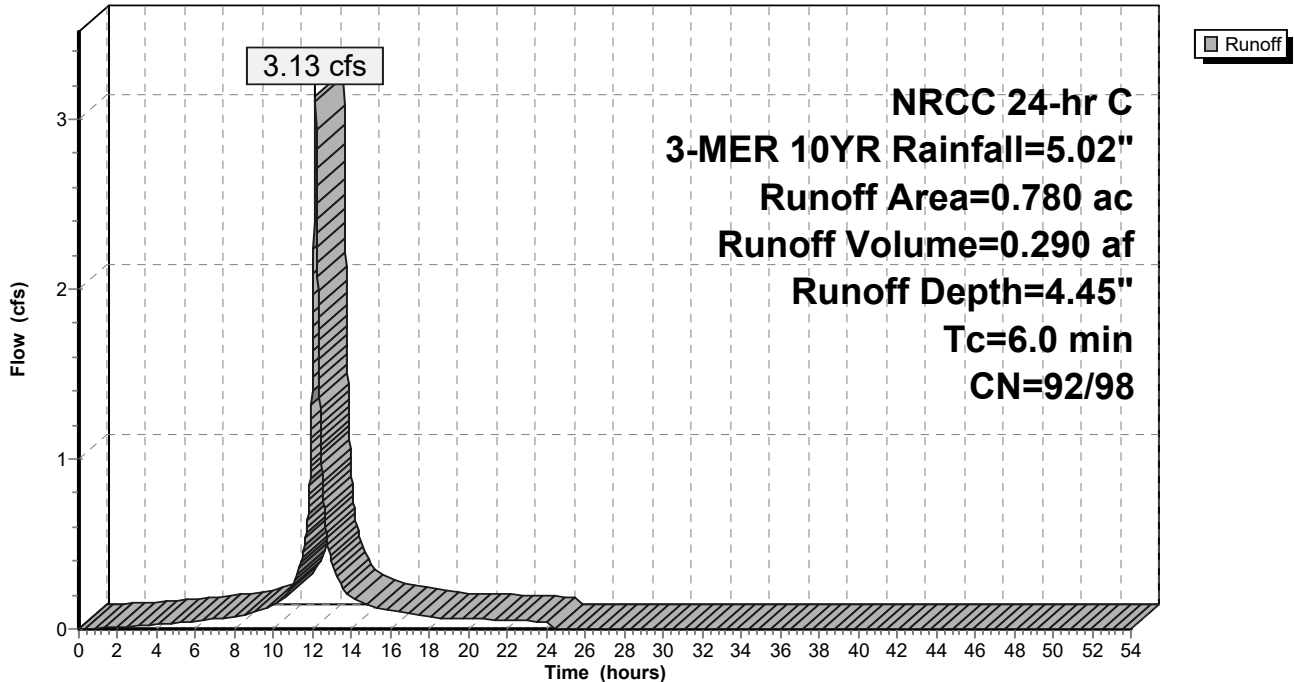
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 3-MER 10YR Rainfall=5.02"

Area (ac)	CN	Description
0.019	98	Roofs, HSG A
0.361	98	Roofs, HSG C
* 0.020	98	Sidewalks HSG C
0.100	74	>75% Grass cover, Good, HSG C
0.280	98	Unconnected roofs, HSG C
0.780	95	Weighted Average
0.380	92	48.72% Pervious Area
0.400	98	51.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PA-3: PA-3**

Hydrograph



**Summary for Subcatchment PA-4: PA-4**

Runoff = 4.52 cfs @ 12.14 hrs, Volume= 0.428 af, Depth= 4.22"

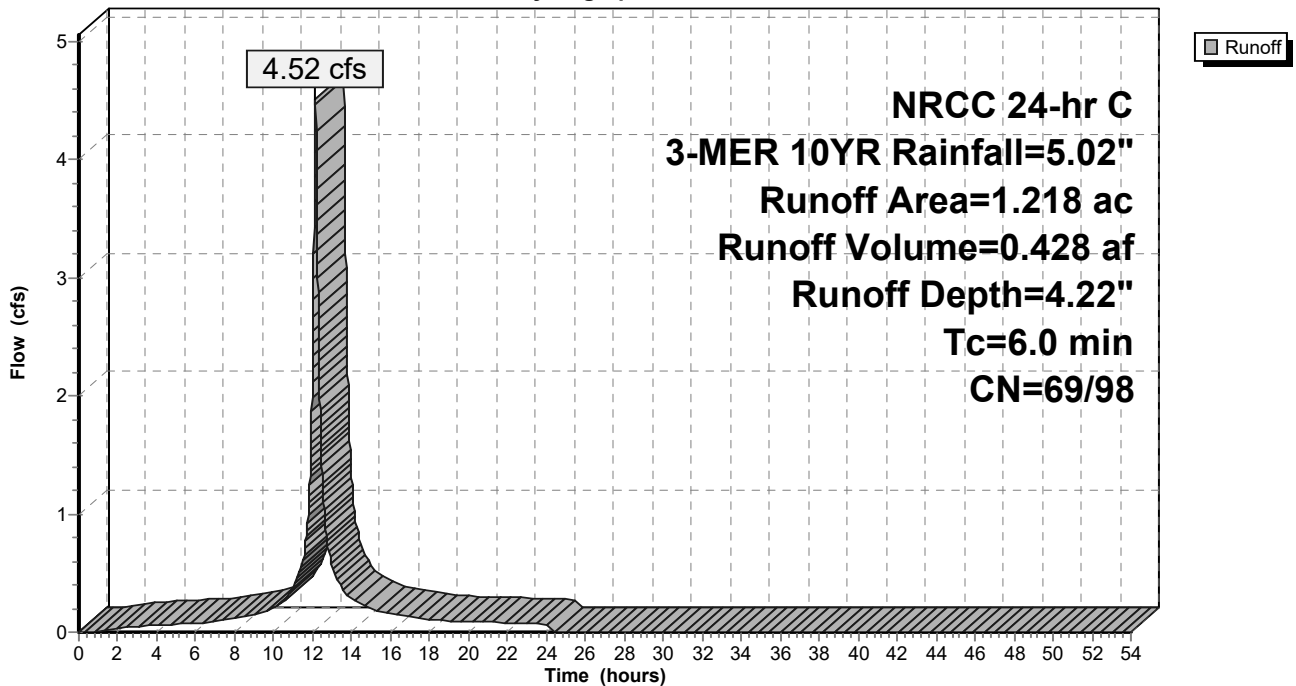
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 3-MER 10YR Rainfall=5.02"

Area (ac)	CN	Description
0.314	98	Paved parking, HSG A
0.112	98	Paved parking, HSG B
0.450	98	Paved parking, HSG C
* 0.017	98	Sidewalks, HSG A
* 0.079	98	Sidewalks, HSG C
0.152	74	>75% Grass cover, Good, HSG C
0.094	61	>75% Grass cover, Good, HSG B
1.218	92	Weighted Average
0.246	69	20.20% Pervious Area
0.972	98	79.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PA-4: PA-4**

Hydrograph





**Summary for Subcatchment PA-5: PA-5**

Runoff = 3.56 cfs @ 12.14 hrs, Volume= 0.340 af, Depth= 4.43"

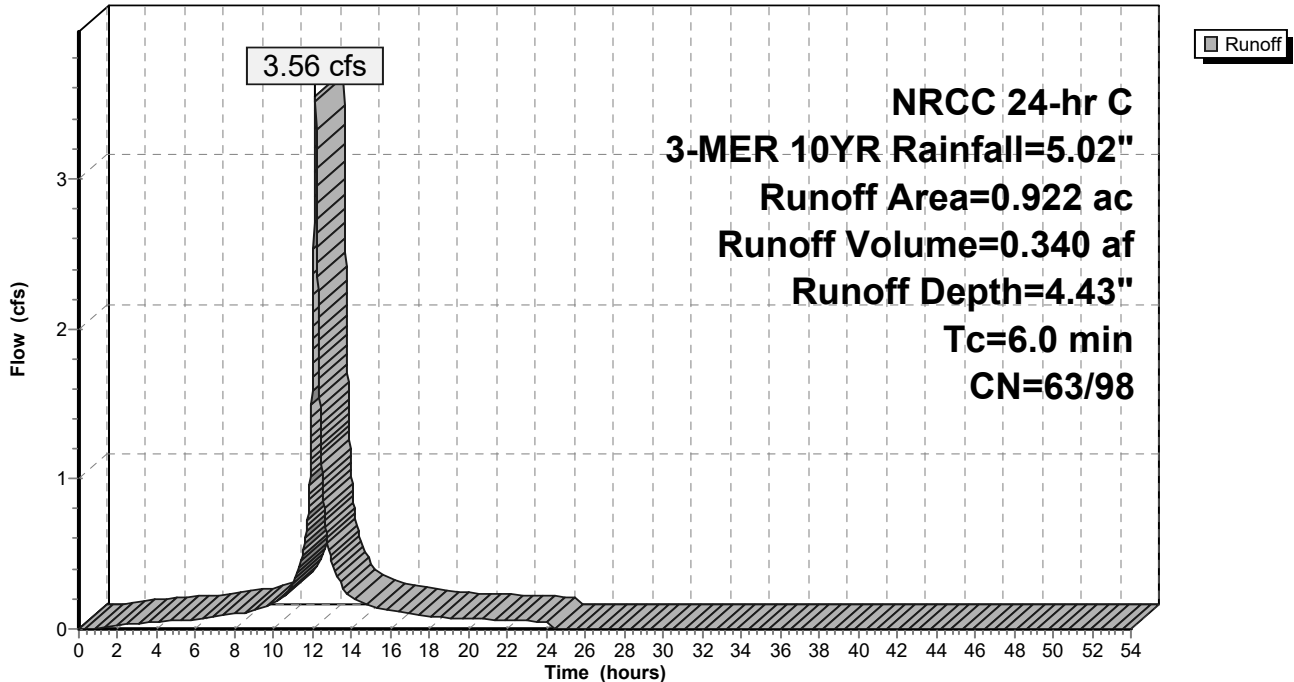
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 3-MER 10YR Rainfall=5.02"

Area (ac)	CN	Description
0.626	98	Paved parking, HSG B
* 0.007	98	Sidewalks, HSG B
0.189	98	Paved parking, HSG C
0.015	74	>75% Grass cover, Good, HSG C
0.085	61	>75% Grass cover, Good, HSG B
0.922	94	Weighted Average
0.100	63	10.85% Pervious Area
0.822	98	89.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PA-5: PA-5**

Hydrograph



**Summary for Subcatchment PA-6-ROW: PA-6-ROW**

Runoff = 0.47 cfs @ 12.14 hrs, Volume= 0.045 af, Depth= 4.50"

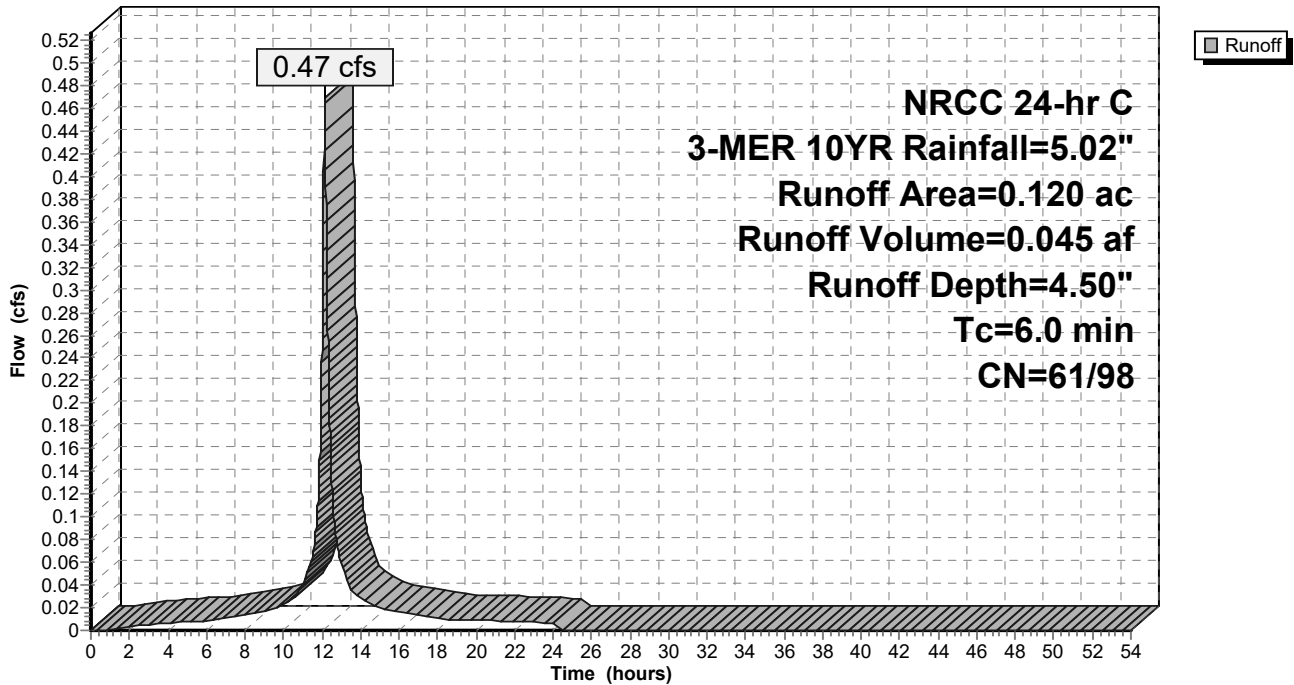
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 3-MER 10YR Rainfall=5.02"

Area (ac)	CN	Description
0.110	98	Paved parking, HSG A
0.010	61	>75% Grass cover, Good, HSG B
0.120	95	Weighted Average
0.010	61	8.33% Pervious Area
0.110	98	91.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PA-6-ROW: PA-6-ROW**

Hydrograph



**Summary for Subcatchment PA-7-ROW: PA-7-ROW**

Runoff = 0.41 cfs @ 12.14 hrs, Volume= 0.040 af, Depth= 4.32"

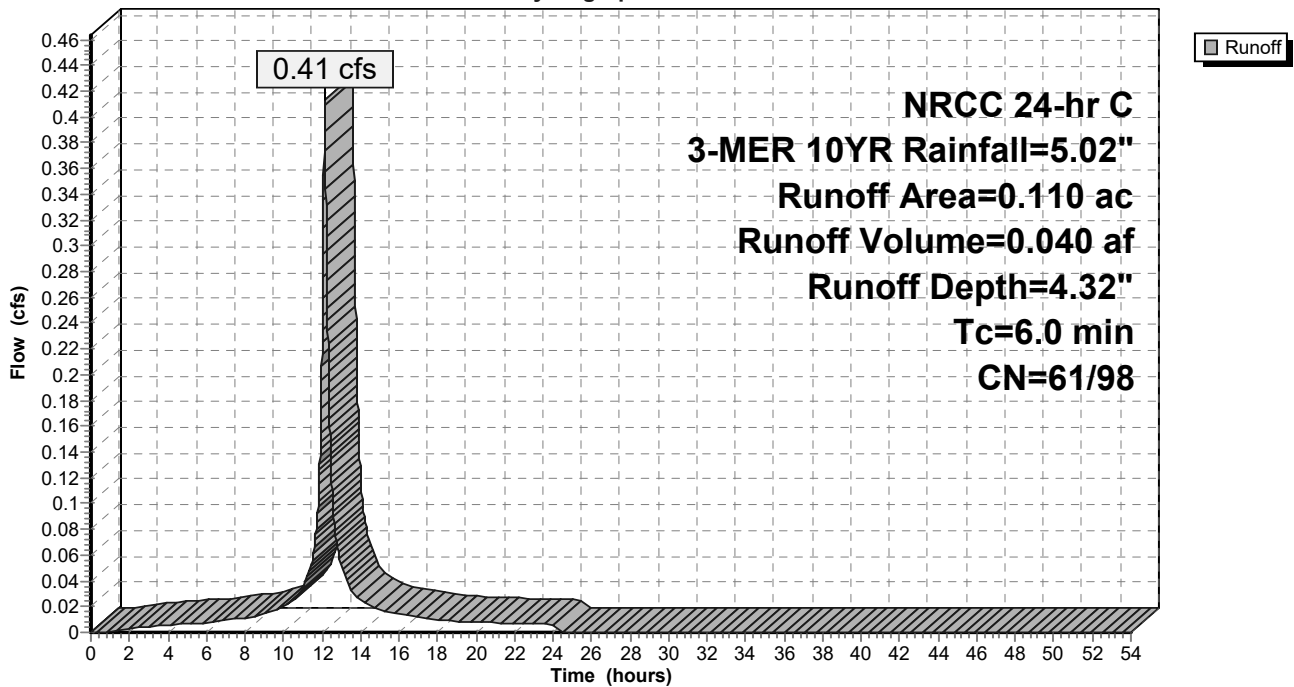
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 3-MER 10YR Rainfall=5.02"

Area (ac)	CN	Description
0.095	98	Paved parking, HSG A
0.015	61	>75% Grass cover, Good, HSG B
0.110	93	Weighted Average
0.015	61	13.64% Pervious Area
0.095	98	86.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PA-7-ROW: PA-7-ROW**

Hydrograph



### Summary for Reach RCP\*: 36" RCP

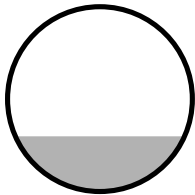
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 52.966 ac, 32.55% Impervious, Inflow Depth = 2.54" for 3-MER 10YR event  
 Inflow = 44.20 cfs @ 12.51 hrs, Volume= 11.207 af  
 Outflow = 44.20 cfs @ 12.51 hrs, Volume= 11.207 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs  
 Max. Velocity= 24.93 fps, Min. Travel Time= 0.0 min  
 Avg. Velocity = 10.79 fps, Avg. Travel Time= 0.0 min

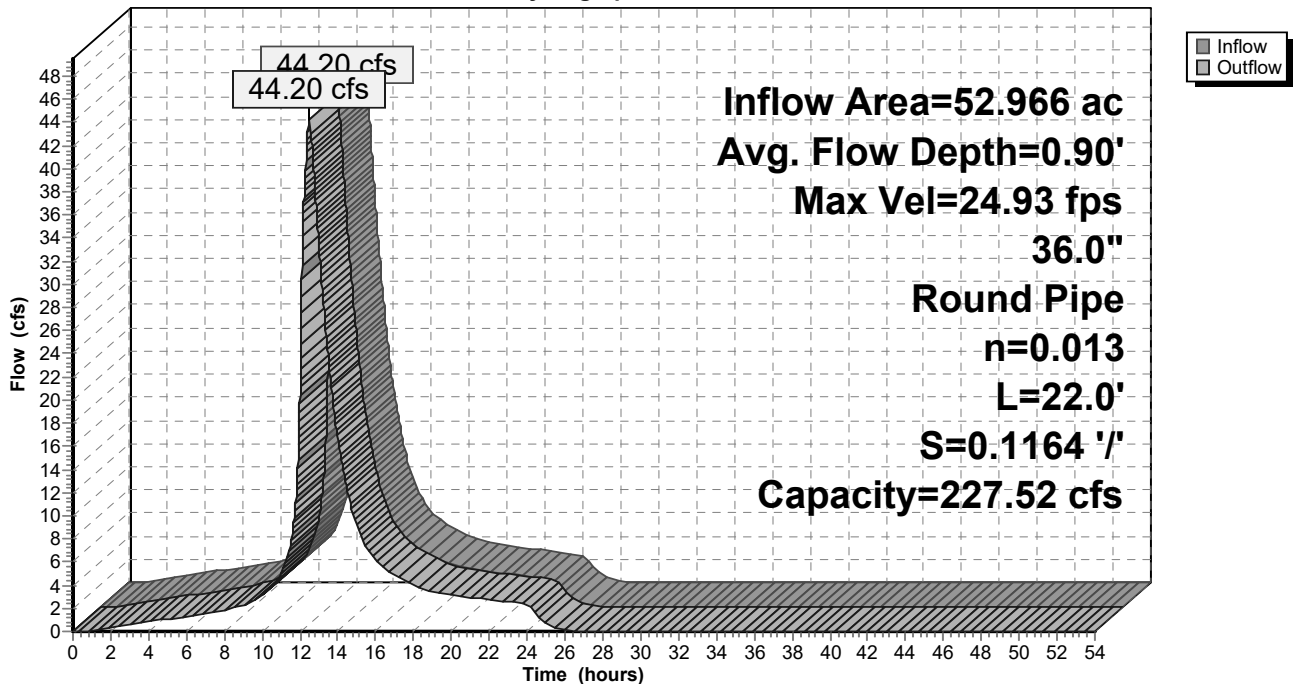
Peak Storage= 39 cf @ 12.51 hrs  
 Average Depth at Peak Storage= 0.90' , Surface Width= 2.75'  
 Bank-Full Depth= 3.00' Flow Area= 7.1 sf, Capacity= 227.52 cfs

36.0" Round Pipe  
 n= 0.013 Concrete pipe, bends & connections  
 Length= 22.0' Slope= 0.1164 '/'  
 Inlet Invert= 80.76', Outlet Invert= 78.20'



### Reach RCP\*: 36" RCP

Hydrograph



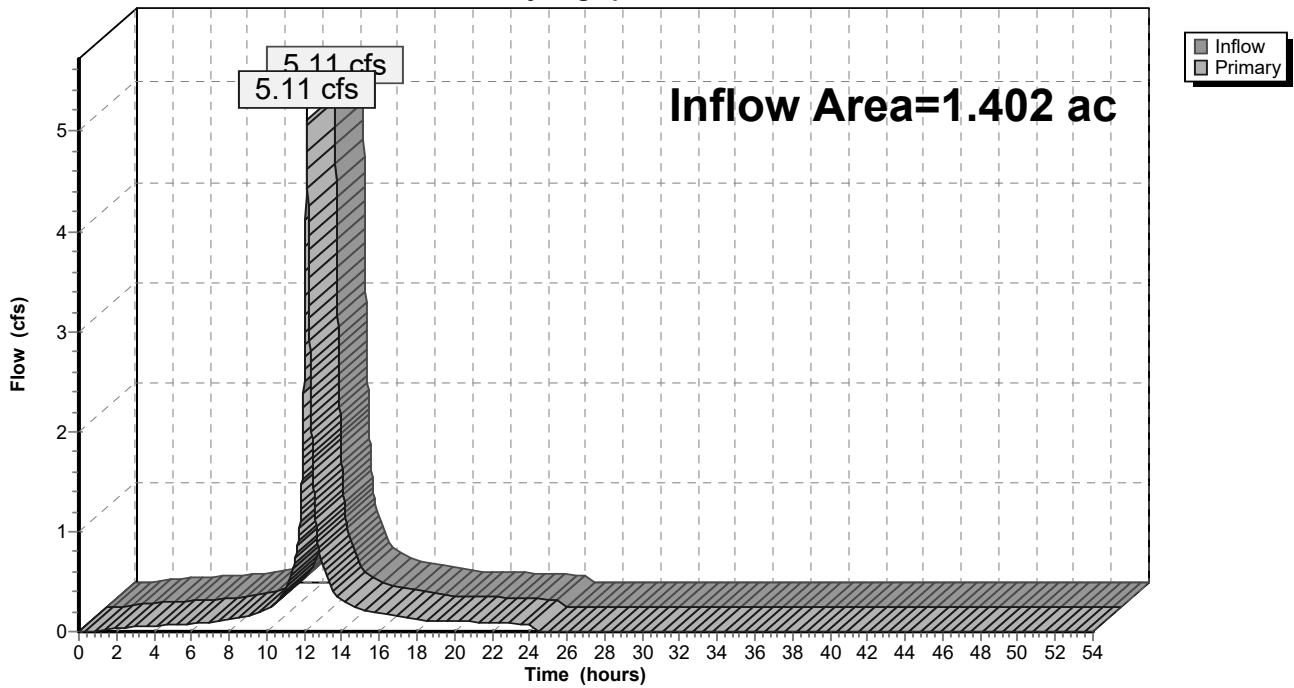
### Summary for Link MTD-A1: MTD-A1

Inflow Area = 1.402 ac, 69.33% Impervious, Inflow Depth = 4.09" for 3-MER 10YR event  
Inflow = 5.11 cfs @ 12.14 hrs, Volume= 0.478 af  
Primary = 5.11 cfs @ 12.14 hrs, Volume= 0.478 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link MTD-A1: MTD-A1

Hydrograph

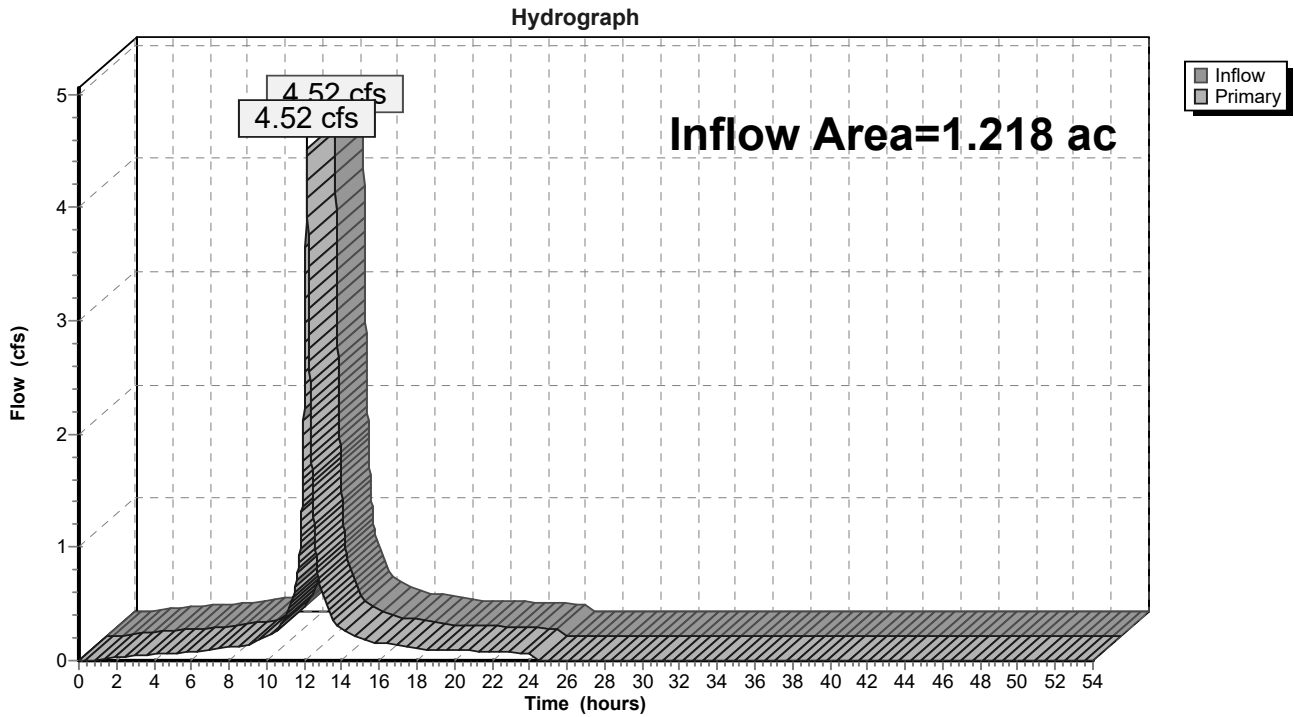


### Summary for Link MTD-A2: MTD-A2

Inflow Area = 1.218 ac, 79.80% Impervious, Inflow Depth = 4.22" for 3-MER 10YR event  
Inflow = 4.52 cfs @ 12.14 hrs, Volume= 0.428 af  
Primary = 4.52 cfs @ 12.14 hrs, Volume= 0.428 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link MTD-A2: MTD-A2



### Summary for Link POA-A1\*: POA-A1\* (Rocky Brook HW)

[62] Hint: Exceeded Reach RCP\* OUTLET depth by 1.80' @ 0.00 hrs

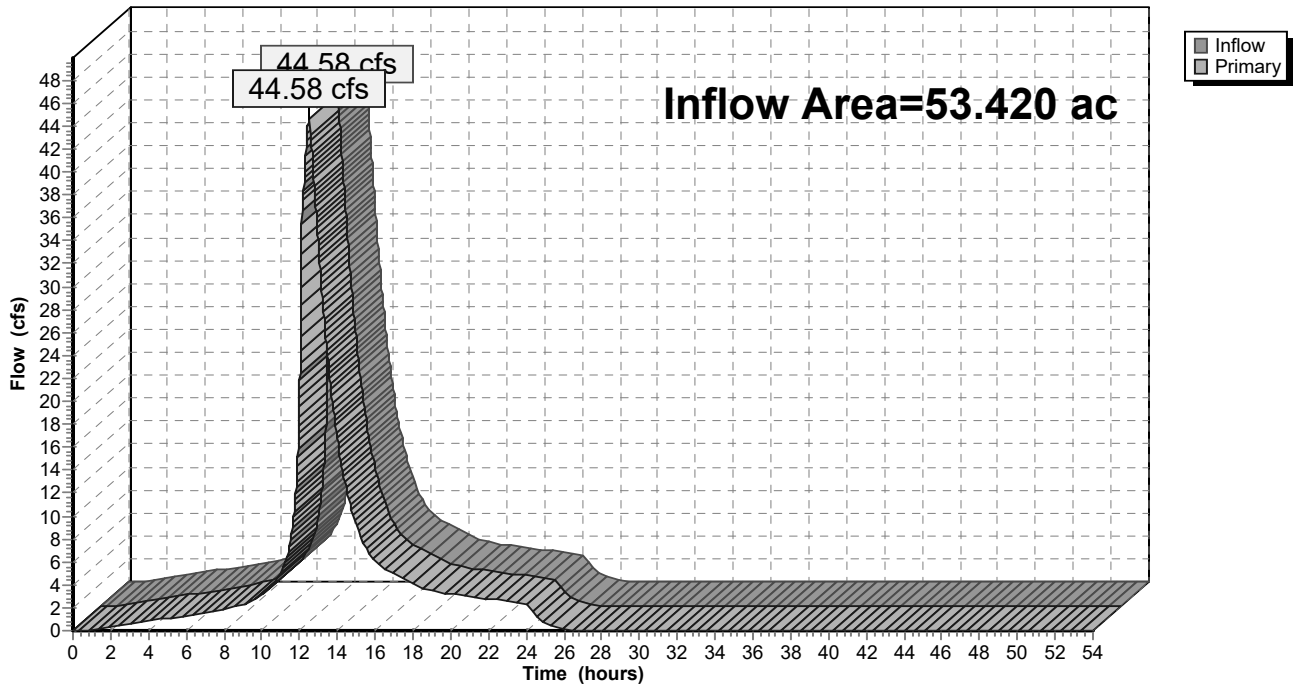
Inflow Area = 53.420 ac, 32.28% Impervious, Inflow Depth = 2.54" for 3-MER 10YR event  
Inflow = 44.58 cfs @ 12.51 hrs, Volume= 11.311 af  
Primary = 44.58 cfs @ 12.51 hrs, Volume= 11.311 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

Fixed water surface Elevation= 80.00'

### Link POA-A1\*: POA-A1\* (Rocky Brook HW)

Hydrograph



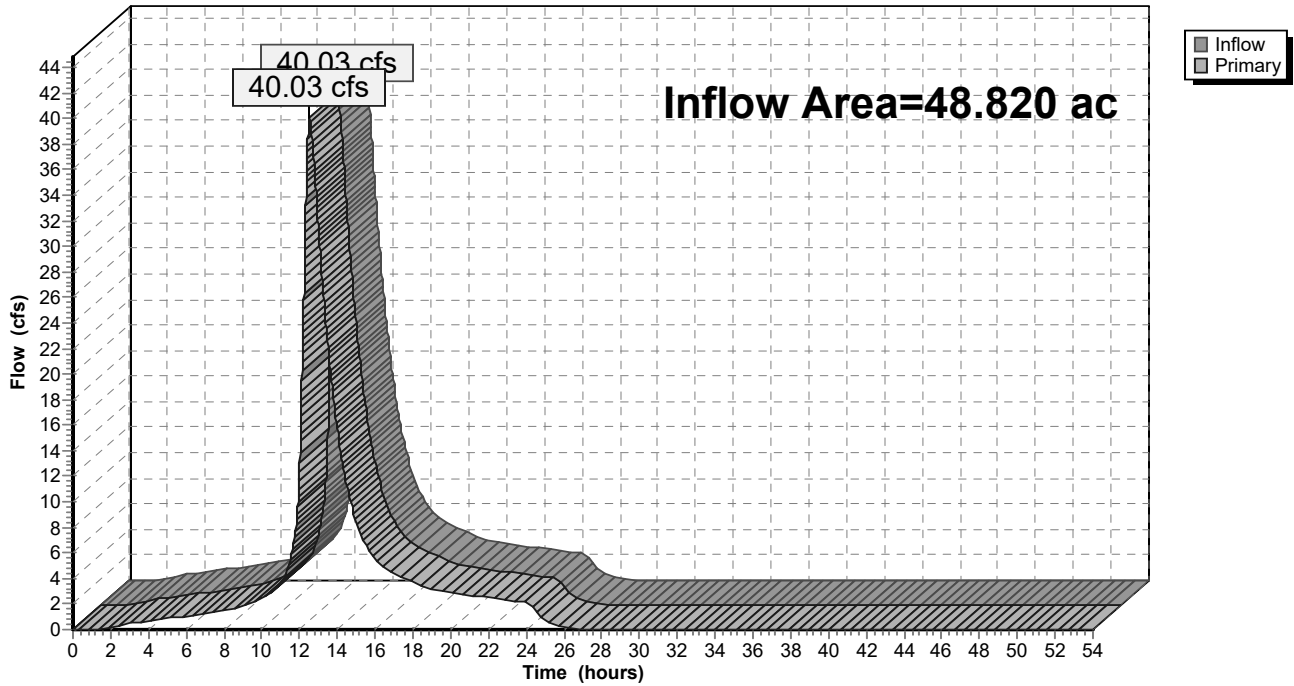
### Summary for Link POA-A1A\*: POA-A1A\*

Inflow Area = 48.820 ac, 29.29% Impervious, Inflow Depth = 2.40" for 3-MER 10YR event  
Inflow = 40.03 cfs @ 12.52 hrs, Volume= 9.769 af  
Primary = 40.03 cfs @ 12.52 hrs, Volume= 9.769 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-A1A\*: POA-A1A\*

Hydrograph





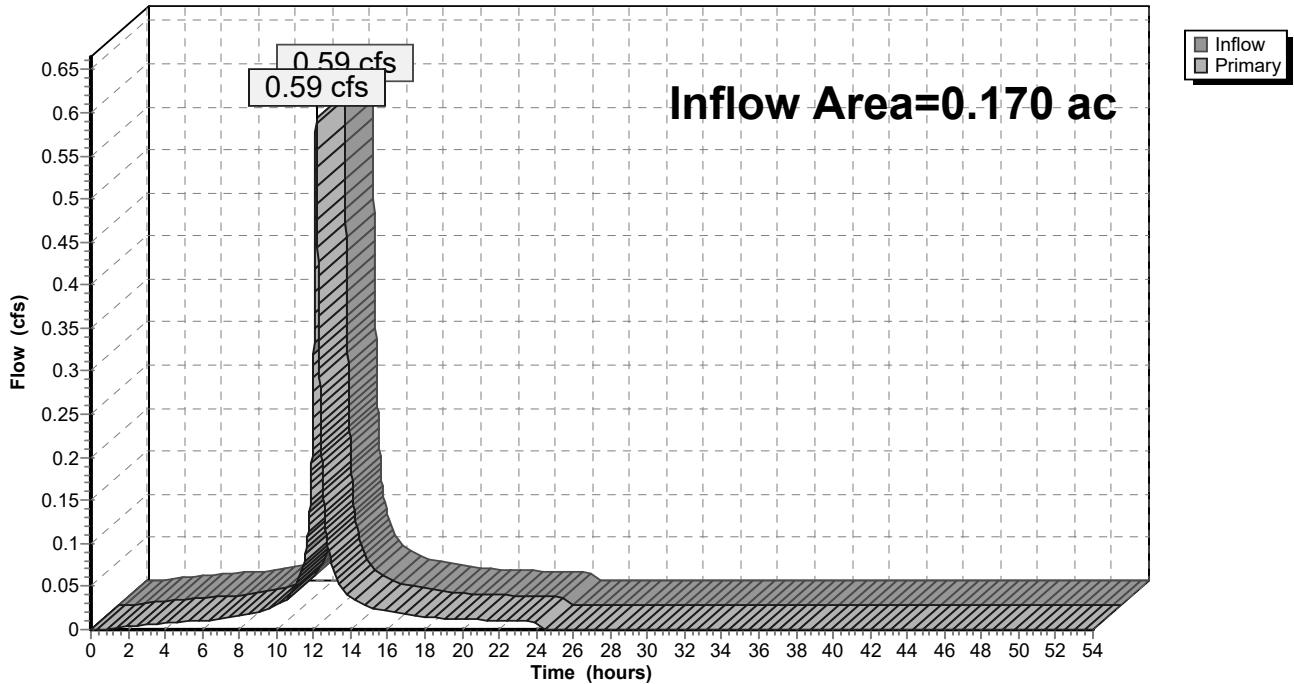
### Summary for Link POA-A2\*: POA-A2\* (BANK ST)

Inflow Area = 0.170 ac, 77.06% Impervious, Inflow Depth = 4.00" for 3-MER 10YR event  
Inflow = 0.59 cfs @ 12.14 hrs, Volume= 0.057 af  
Primary = 0.59 cfs @ 12.14 hrs, Volume= 0.057 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-A2\*: POA-A2\* (BANK ST)

Hydrograph



Time span=0.00-54.00 hrs, dt=0.01 hrs, 5401 points  
 Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious  
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

<b>Subcatchment EA-10-OS*: EA-10-OS</b>	Runoff Area=0.480 ac 31.25% Impervious Runoff Depth=4.52" Tc=6.0 min CN=79/98 Runoff=2.04 cfs 0.181 af
<b>Subcatchment EA-8-OS*: EA-8-OS</b>	Runoff Area=46.420 ac 30.00% Impervious Runoff Depth=3.29" Flow Length=2,965' Tc=36.1 min CN=61/98 Runoff=53.83 cfs 12.715 af
<b>Subcatchment EA-9-OS*: EA-9-OS</b>	Runoff Area=2.220 ac 11.26% Impervious Runoff Depth=3.22" Flow Length=500' Tc=6.7 min CN=69/98 Runoff=6.60 cfs 0.595 af
<b>Subcatchment PA-1: PA-1</b>	Runoff Area=0.060 ac 21.67% Impervious Runoff Depth=2.70" Tc=6.0 min CN=57/98 Runoff=0.15 cfs 0.014 af
<b>Subcatchment PA-11: PA-11</b>	Runoff Area=0.746 ac 79.76% Impervious Runoff Depth=4.95" Tc=6.0 min CN=46/98 Runoff=3.16 cfs 0.308 af
<b>Subcatchment PA-12: PA-12</b>	Runoff Area=0.454 ac 1.32% Impervious Runoff Depth=3.79" Tc=6.0 min CN=78/98 Runoff=1.71 cfs 0.143 af
<b>Subcatchment PA-2: PA-2</b>	Runoff Area=0.060 ac 60.00% Impervious Runoff Depth=4.43" Tc=6.0 min CN=61/98 Runoff=0.23 cfs 0.022 af
<b>Subcatchment PA-3: PA-3</b>	Runoff Area=0.780 ac 51.28% Impervious Runoff Depth=5.62" Tc=6.0 min CN=92/98 Runoff=3.92 cfs 0.365 af
<b>Subcatchment PA-4: PA-4</b>	Runoff Area=1.218 ac 79.80% Impervious Runoff Depth=5.34" Tc=6.0 min CN=69/98 Runoff=5.70 cfs 0.542 af
<b>Subcatchment PA-5: PA-5</b>	Runoff Area=0.922 ac 89.15% Impervious Runoff Depth=5.57" Tc=6.0 min CN=63/98 Runoff=4.45 cfs 0.428 af
<b>Subcatchment PA-6-ROW: PA-6-ROW</b>	Runoff Area=0.120 ac 91.67% Impervious Runoff Depth=5.64" Tc=6.0 min CN=61/98 Runoff=0.59 cfs 0.056 af
<b>Subcatchment PA-7-ROW: PA-7-ROW</b>	Runoff Area=0.110 ac 86.36% Impervious Runoff Depth=5.44" Tc=6.0 min CN=61/98 Runoff=0.52 cfs 0.050 af
<b>Reach RCP*: 36" RCP</b>	Avg. Flow Depth=1.07' Max Vel=27.35 fps Inflow=61.52 cfs 15.203 af 36.0" Round Pipe n=0.013 L=22.0' S=0.1164 '/ Capacity=227.52 cfs Outflow=61.52 cfs 15.203 af
<b>Link MTD-A1: MTD-A1</b>	Inflow=6.49 cfs 0.608 af Primary=6.49 cfs 0.608 af
<b>Link MTD-A2: MTD-A2</b>	Inflow=5.70 cfs 0.542 af Primary=5.70 cfs 0.542 af
<b>Link POA-A1*: POA-A1* (Rocky Brook HW)</b>	Inflow=62.03 cfs 15.346 af Primary=62.03 cfs 15.346 af

**200811\_Model**

*NRCC 24-hr C 4-MER 25YR Rainfall=6.20"*

Prepared by Maser Consulting

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**Link POA-A1A\*: POA-A1A\***

Inflow=56.26 cfs 13.380 af  
Primary=56.26 cfs 13.380 af

**Link POA-A2\*: POA-A2\* (BANK ST)**

Inflow=0.75 cfs 0.072 af  
Primary=0.75 cfs 0.072 af

**Total Runoff Area = 53.590 ac Runoff Volume = 15.418 af Average Runoff Depth = 3.45"  
67.58% Pervious = 36.215 ac 32.42% Impervious = 17.375 ac**

**Summary for Subcatchment EA-10-OS\*: EA-10-OS**

Runoff = 2.04 cfs @ 12.14 hrs, Volume= 0.181 af, Depth= 4.52"

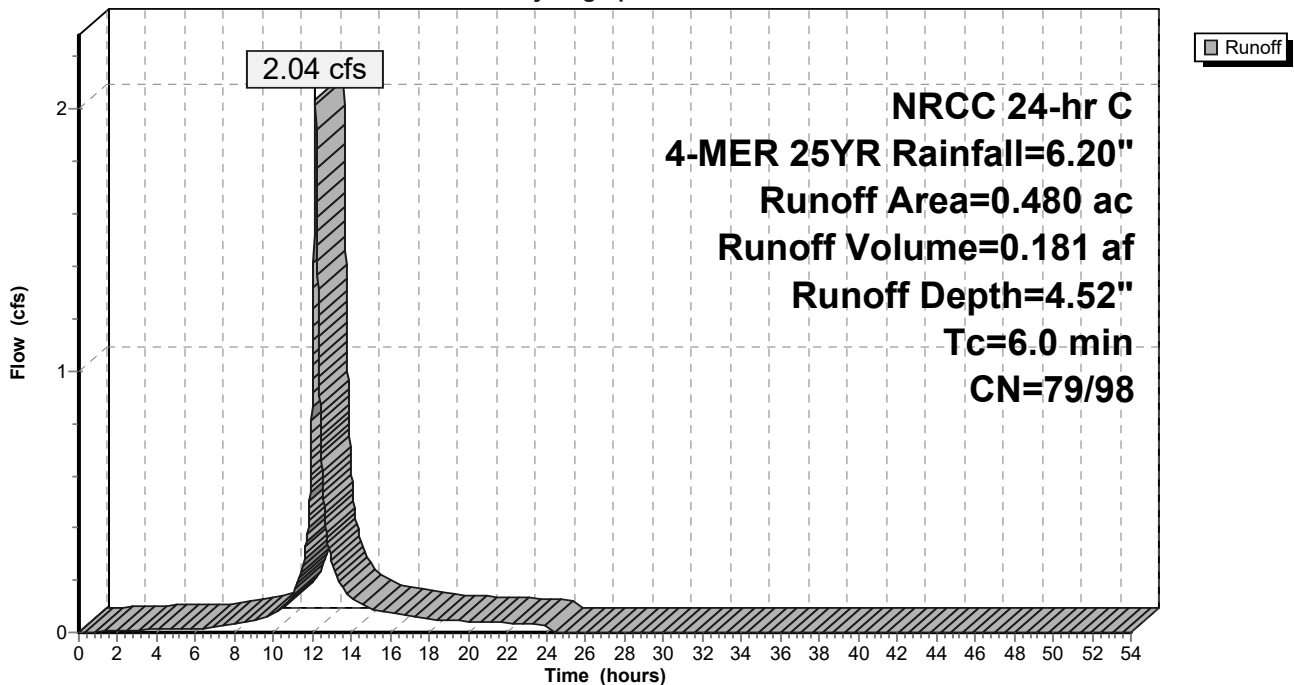
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 4-MER 25YR Rainfall=6.20"

Area (ac)	CN	Description
0.150	98	Roofs, HSG C
0.070	98	Unconnected pavement, HSG C
0.220	74	>75% Grass cover, Good, HSG C
0.040	72	Woods/grass comb., Good, HSG C
0.480	85	Weighted Average
0.330	79	68.75% Pervious Area
0.150	98	31.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EA-10-OS\*: EA-10-OS**

Hydrograph



**Summary for Subcatchment EA-8-OS\*: EA-8-OS**

Runoff = 53.83 cfs @ 12.52 hrs, Volume= 12.715 af, Depth= 3.29"

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 4-MER 25YR Rainfall=6.20"

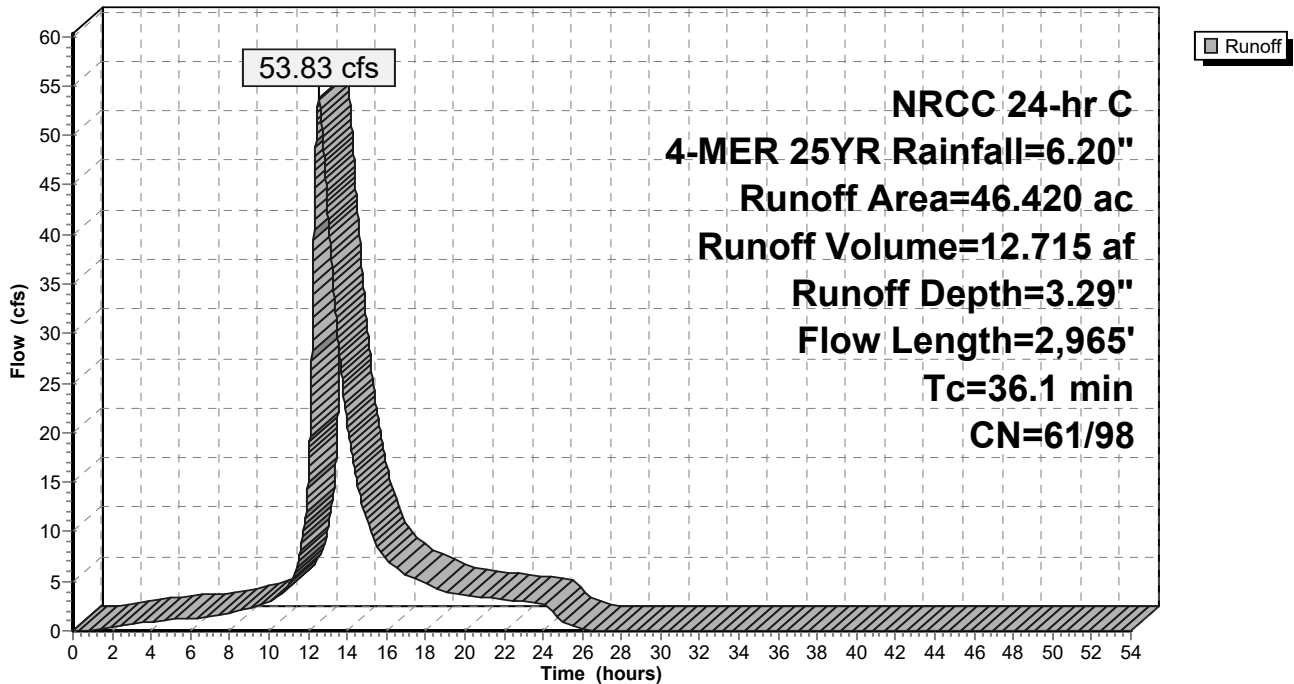
Area (ac)	CN	Description
46.420	72	1/3 acre lots, 30% imp, HSG B
32.494	61	70.00% Pervious Area
13.926	98	30.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.7	100	0.0100	0.13		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.31"
3.9	370	0.0060	1.57		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
17.5	2,100		2.00		<b>Direct Entry, Pipe Flow</b>
2.0	395	0.0170	3.22	57.93	<b>Trap/Vee/Rect Channel Flow,</b> Bot.W=4.50' D=2.00' Z= 2.0 & 2.5 ' Top.W=13.50' n= 0.070
36.1	2,965	Total			

**Subcatchment EA-8-OS\*: EA-8-OS**

Hydrograph



**Summary for Subcatchment EA-9-OS\*: EA-9-0S**

Runoff = 6.60 cfs @ 12.15 hrs, Volume= 0.595 af, Depth= 3.22"

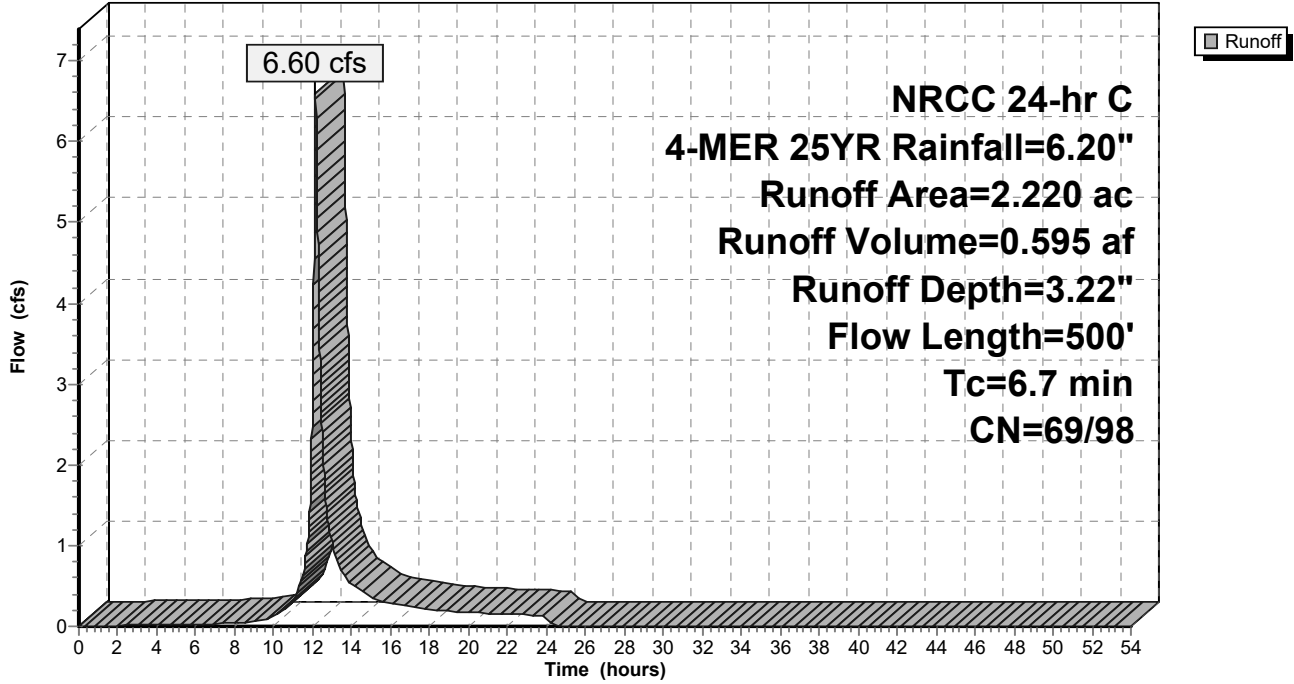
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 4-MER 25YR Rainfall=6.20"

Area (ac)	CN	Description
0.250	98	Roofs, HSG C
0.140	98	Unconnected pavement, HSG C
0.430	80	>75% Grass cover, Good, HSG D
0.870	61	>75% Grass cover, Good, HSG B
0.270	58	Woods/grass comb., Good, HSG B
0.050	79	Woods/grass comb., Good, HSG D
0.210	73	Brush, Good, HSG D
2.220	72	Weighted Average
1.970	69	88.74% Pervious Area
0.250	98	11.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	70	0.0900	0.29		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.31"
1.5	190	0.0900	2.10		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
1.2	240	0.0170	3.22	57.93	<b>Trap/Vee/Rect Channel Flow,</b> Bot.W=4.50' D=2.00' Z= 2.0 & 2.5 ' Top.W=13.50' n= 0.070
6.7	500	Total			

Subcatchment EA-9-OS\*: EA-9-0S

Hydrograph



**Summary for Subcatchment PA-1: PA-1**

Runoff = 0.15 cfs @ 12.14 hrs, Volume= 0.014 af, Depth= 2.70"

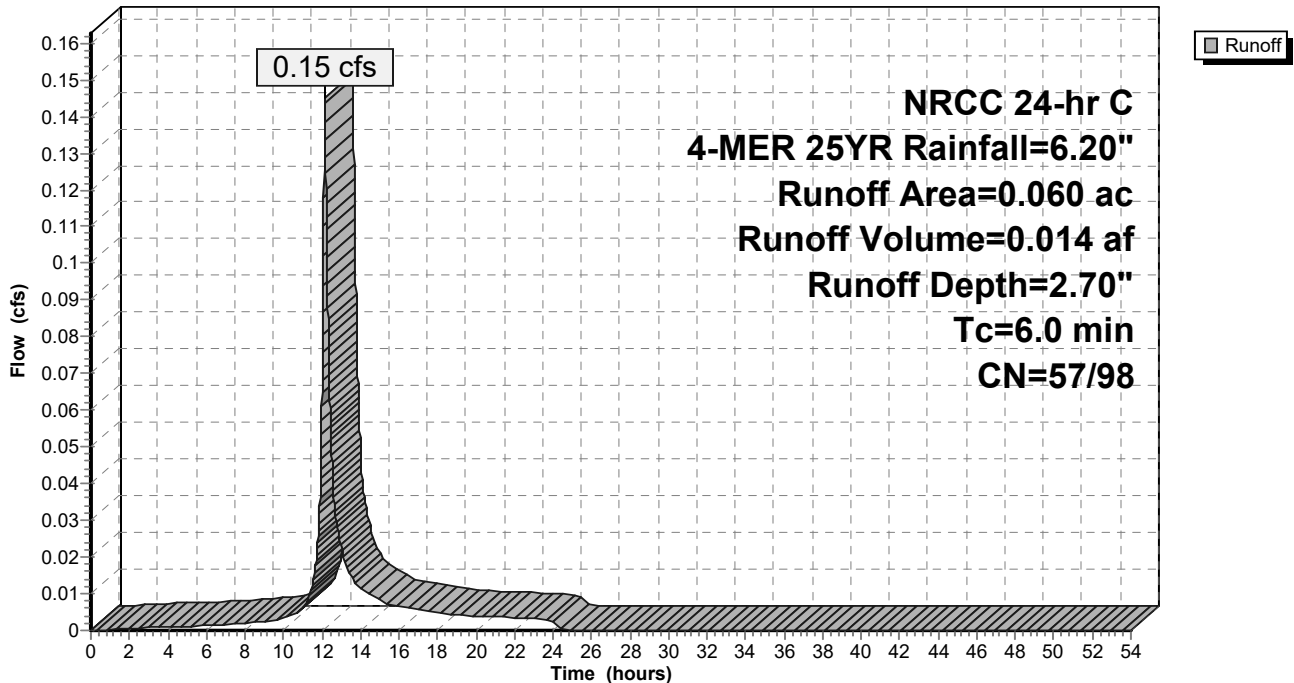
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 4-MER 25YR Rainfall=6.20"

Area (ac)	CN	Description
* 0.003	98	Sidewalks, HSG A
* 0.010	98	Sidewalks, HSG B
0.009	39	>75% Grass cover, Good, HSG A
0.038	61	>75% Grass cover, Good, HSG B
0.060	66	Weighted Average
0.047	57	78.33% Pervious Area
0.013	98	21.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PA-1: PA-1**

Hydrograph





**Summary for Subcatchment PA-11: PA-11**

Runoff = 3.16 cfs @ 12.14 hrs, Volume= 0.308 af, Depth= 4.95"

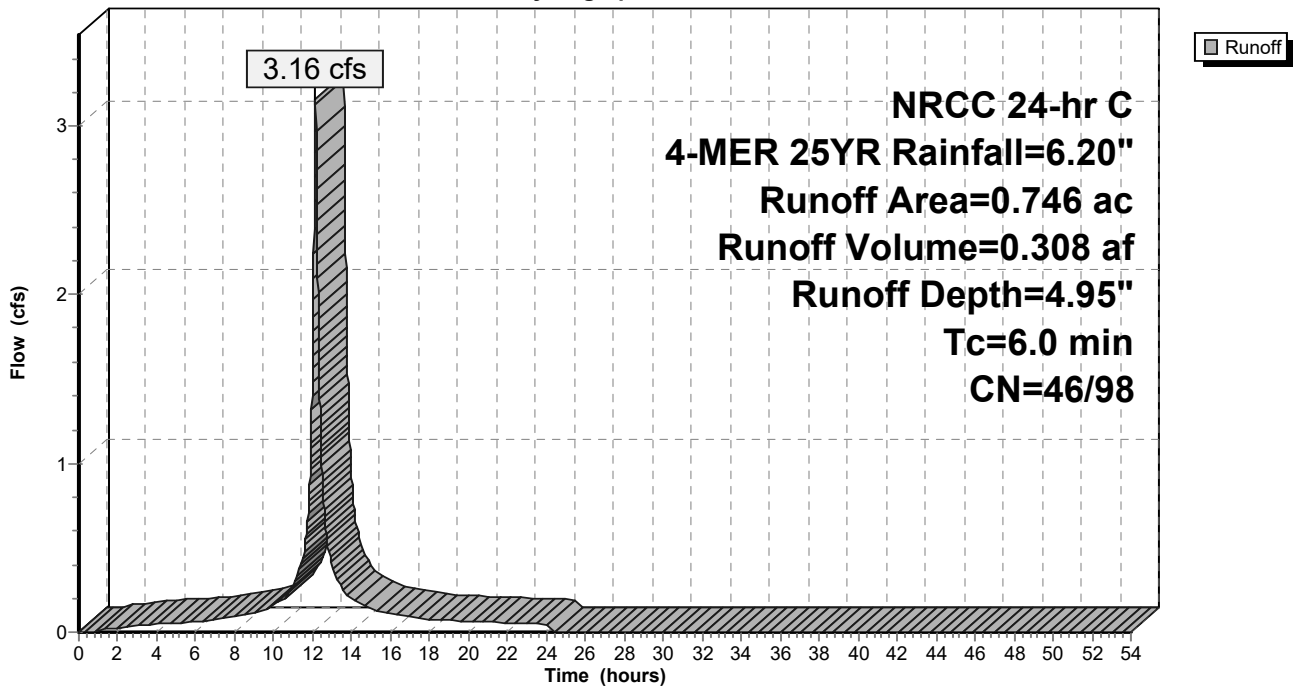
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 4-MER 25YR Rainfall=6.20"

Area (ac)	CN	Description
0.350	98	Roofs, HSG A
0.193	98	Roofs, HSG B
* 0.049	98	Sidewalks, HSG A
* 0.003	98	Sidewalks, HSG B
0.013	74	>75% Grass cover, Good, HSG C
0.024	61	>75% Grass cover, Good, HSG B
0.114	39	>75% Grass cover, Good, HSG A
0.746	87	Weighted Average
0.151	46	20.24% Pervious Area
0.595	98	79.76% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PA-11: PA-11**

Hydrograph



**Summary for Subcatchment PA-12: PA-12**

Runoff = 1.71 cfs @ 12.14 hrs, Volume= 0.143 af, Depth= 3.79"

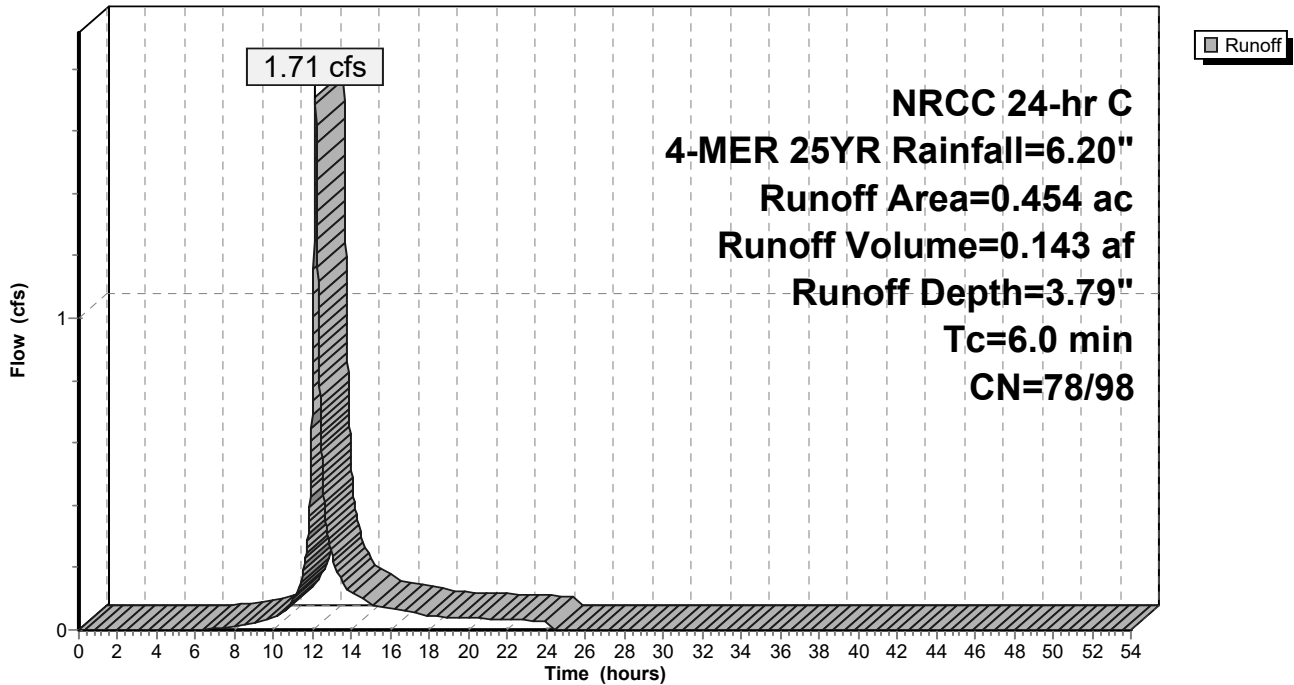
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 4-MER 25YR Rainfall=6.20"

Area (ac)	CN	Description
0.039	61	>75% Grass cover, Good, HSG B
0.006	98	Paved parking, HSG D
0.409	80	>75% Grass cover, Good, HSG D
0.454	79	Weighted Average
0.448	78	98.68% Pervious Area
0.006	98	1.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PA-12: PA-12**

Hydrograph



**Summary for Subcatchment PA-2: PA-2**

Runoff = 0.23 cfs @ 12.14 hrs, Volume= 0.022 af, Depth= 4.43"

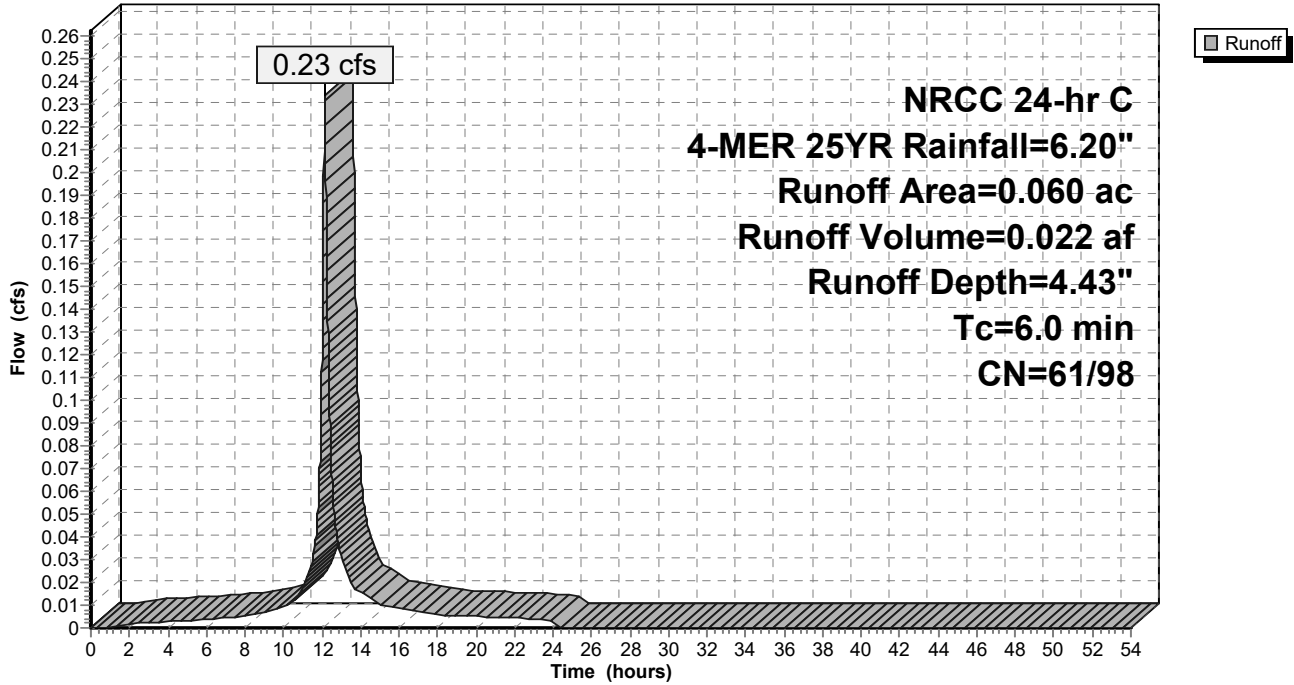
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 4-MER 25YR Rainfall=6.20"

Area (ac)	CN	Description
* 0.018	98	Sidewalks, HSG A
* 0.018	98	Sidewalks, HSG B
0.024	61	>75% Grass cover, Good, HSG B
0.060	83	Weighted Average
0.024	61	40.00% Pervious Area
0.036	98	60.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PA-2: PA-2**

Hydrograph



**Summary for Subcatchment PA-3: PA-3**

Runoff = 3.92 cfs @ 12.14 hrs, Volume= 0.365 af, Depth= 5.62"

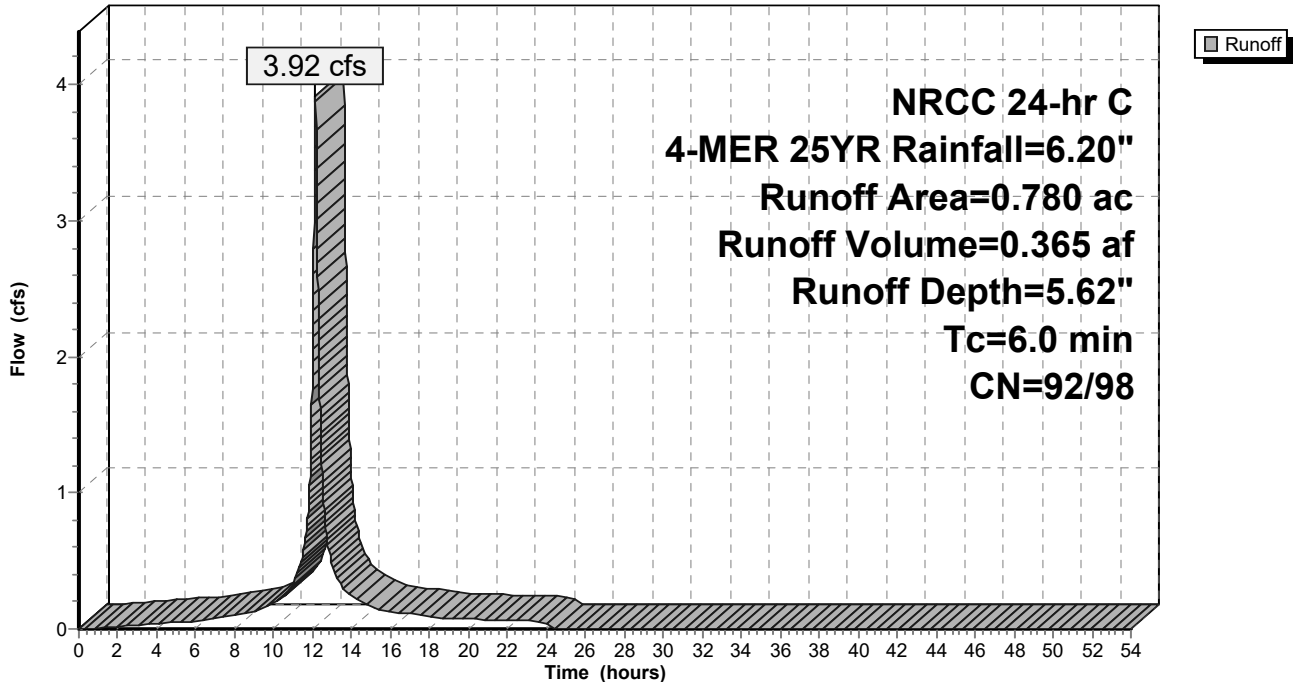
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 4-MER 25YR Rainfall=6.20"

Area (ac)	CN	Description
0.019	98	Roofs, HSG A
0.361	98	Roofs, HSG C
* 0.020	98	Sidewalks HSG C
0.100	74	>75% Grass cover, Good, HSG C
0.280	98	Unconnected roofs, HSG C
0.780	95	Weighted Average
0.380	92	48.72% Pervious Area
0.400	98	51.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PA-3: PA-3**

Hydrograph



**Summary for Subcatchment PA-4: PA-4**

Runoff = 5.70 cfs @ 12.14 hrs, Volume= 0.542 af, Depth= 5.34"

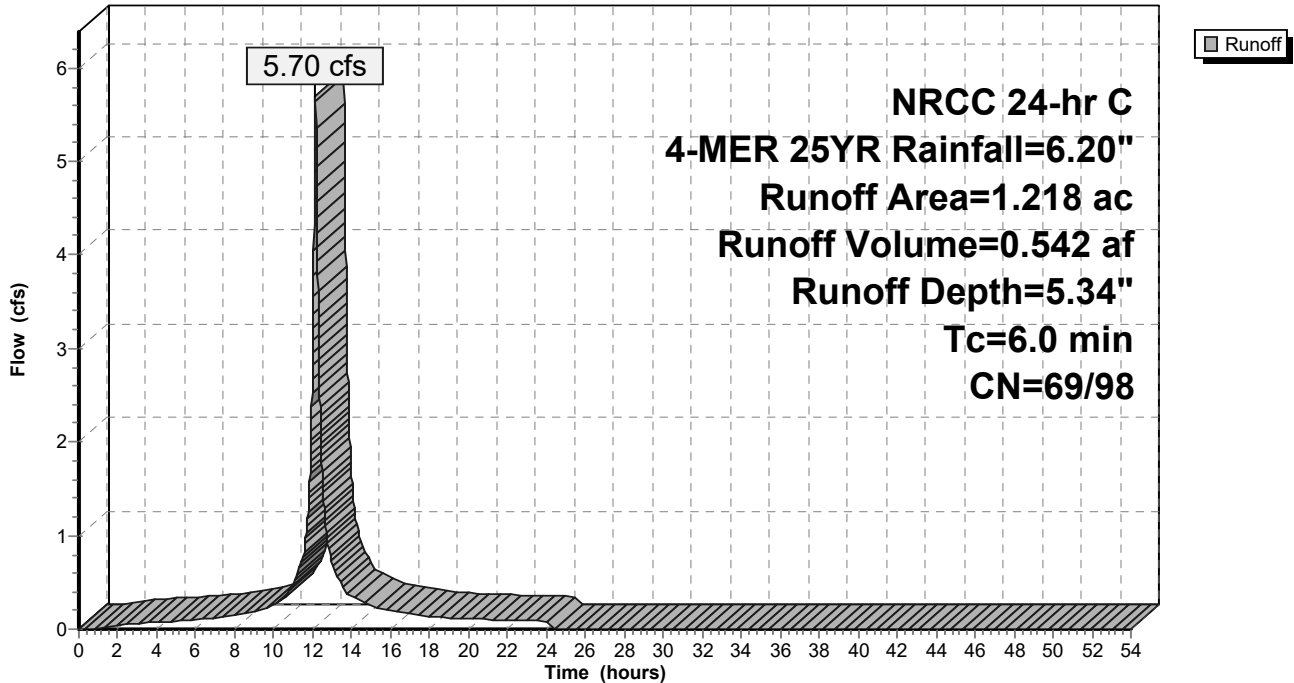
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 4-MER 25YR Rainfall=6.20"

Area (ac)	CN	Description
0.314	98	Paved parking, HSG A
0.112	98	Paved parking, HSG B
0.450	98	Paved parking, HSG C
* 0.017	98	Sidewalks, HSG A
* 0.079	98	Sidewalks, HSG C
0.152	74	>75% Grass cover, Good, HSG C
0.094	61	>75% Grass cover, Good, HSG B
1.218	92	Weighted Average
0.246	69	20.20% Pervious Area
0.972	98	79.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PA-4: PA-4**

Hydrograph



**Summary for Subcatchment PA-5: PA-5**

Runoff = 4.45 cfs @ 12.14 hrs, Volume= 0.428 af, Depth= 5.57"

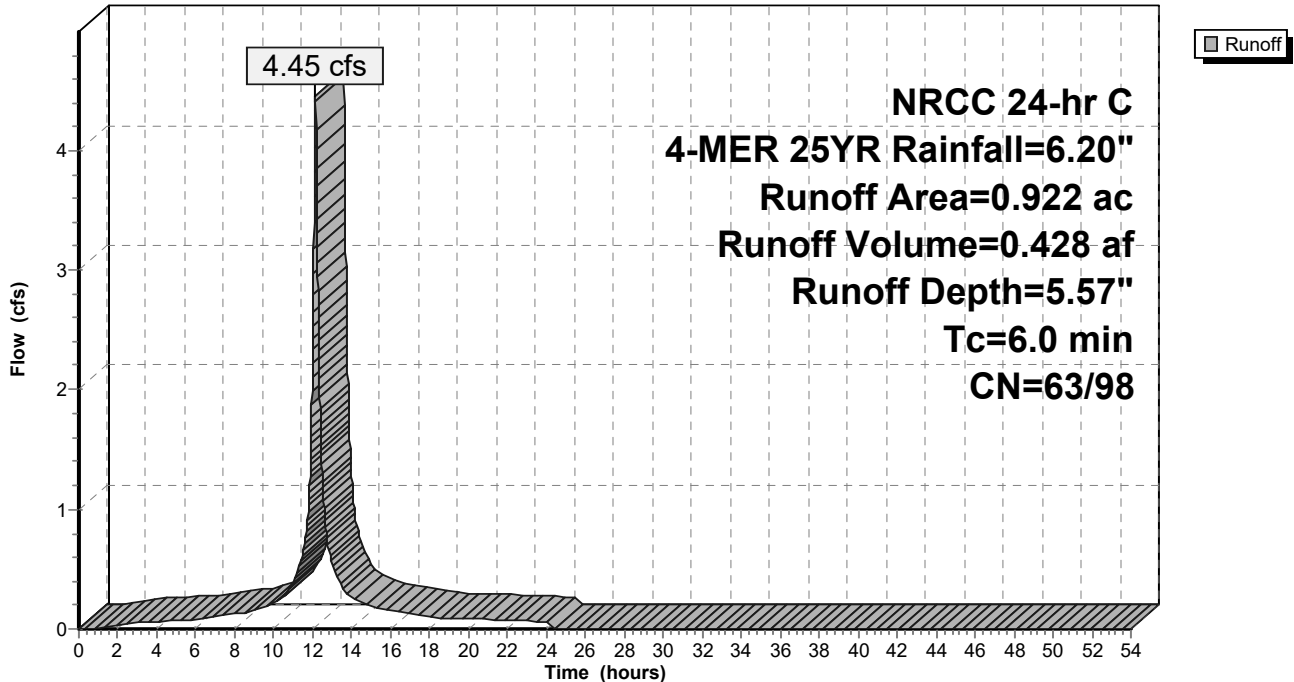
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 4-MER 25YR Rainfall=6.20"

Area (ac)	CN	Description
0.626	98	Paved parking, HSG B
* 0.007	98	Sidewalks, HSG B
0.189	98	Paved parking, HSG C
0.015	74	>75% Grass cover, Good, HSG C
0.085	61	>75% Grass cover, Good, HSG B
0.922	94	Weighted Average
0.100	63	10.85% Pervious Area
0.822	98	89.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PA-5: PA-5**

Hydrograph



**Summary for Subcatchment PA-6-ROW: PA-6-ROW**

Runoff = 0.59 cfs @ 12.14 hrs, Volume= 0.056 af, Depth= 5.64"

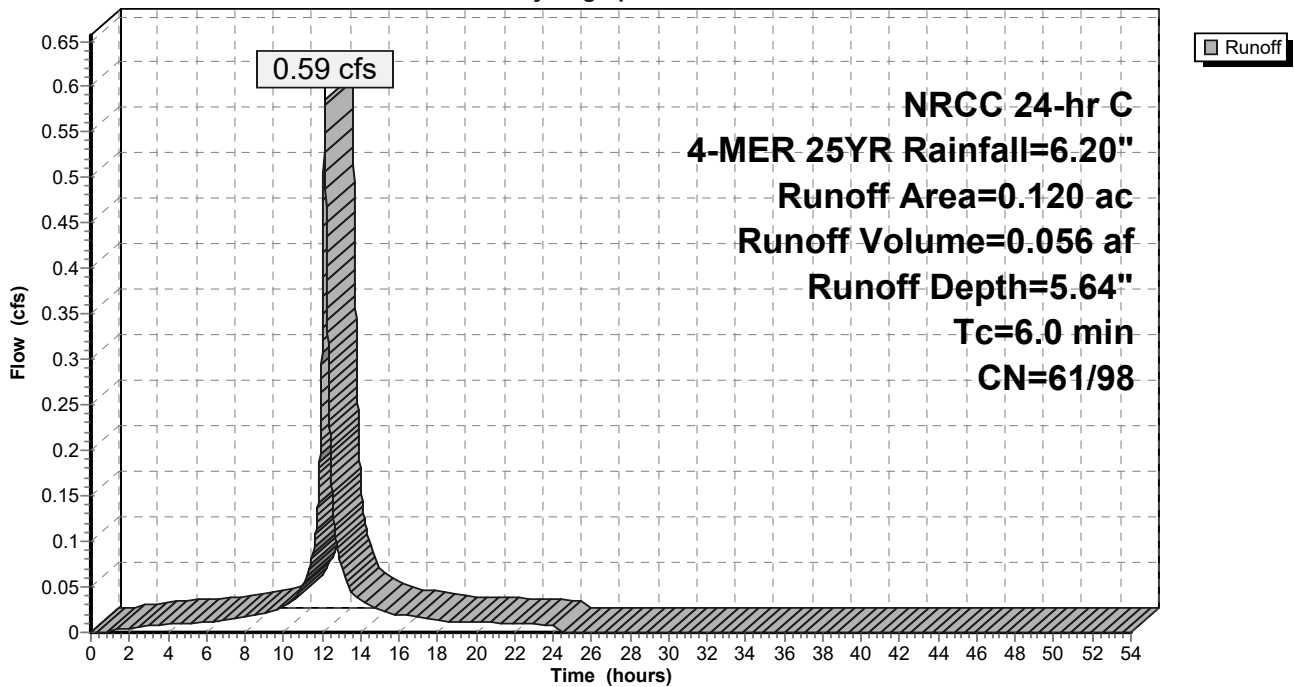
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 4-MER 25YR Rainfall=6.20"

Area (ac)	CN	Description
0.110	98	Paved parking, HSG A
0.010	61	>75% Grass cover, Good, HSG B
0.120	95	Weighted Average
0.010	61	8.33% Pervious Area
0.110	98	91.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PA-6-ROW: PA-6-ROW**

Hydrograph



**Summary for Subcatchment PA-7-ROW: PA-7-ROW**

Runoff = 0.52 cfs @ 12.14 hrs, Volume= 0.050 af, Depth= 5.44"

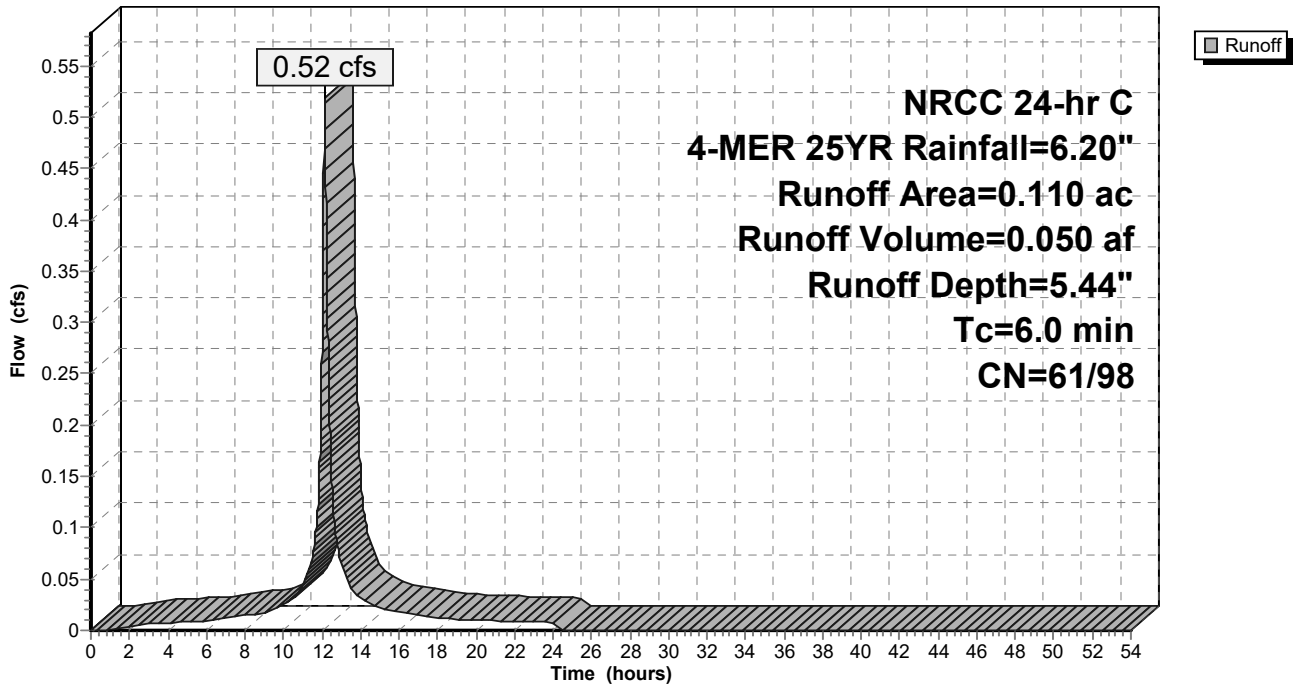
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 4-MER 25YR Rainfall=6.20"

Area (ac)	CN	Description
0.095	98	Paved parking, HSG A
0.015	61	>75% Grass cover, Good, HSG B
0.110	93	Weighted Average
0.015	61	13.64% Pervious Area
0.095	98	86.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PA-7-ROW: PA-7-ROW**

Hydrograph





### Summary for Reach RCP\*: 36" RCP

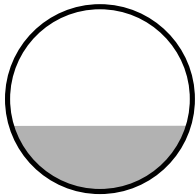
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 52.966 ac, 32.55% Impervious, Inflow Depth = 3.44" for 4-MER 25YR event  
 Inflow = 61.52 cfs @ 12.51 hrs, Volume= 15.203 af  
 Outflow = 61.52 cfs @ 12.51 hrs, Volume= 15.203 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs  
 Max. Velocity= 27.35 fps, Min. Travel Time= 0.0 min  
 Avg. Velocity = 11.72 fps, Avg. Travel Time= 0.0 min

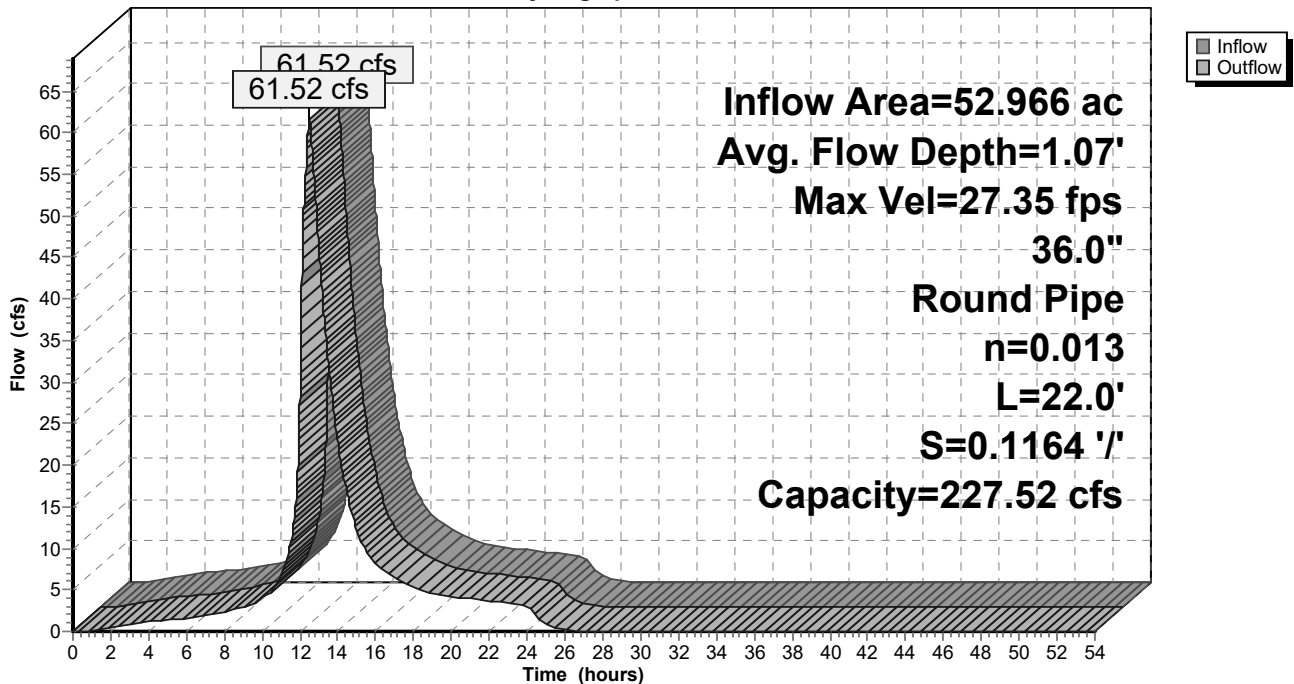
Peak Storage= 49 cf @ 12.51 hrs  
 Average Depth at Peak Storage= 1.07' , Surface Width= 2.87'  
 Bank-Full Depth= 3.00' Flow Area= 7.1 sf, Capacity= 227.52 cfs

36.0" Round Pipe  
 n= 0.013 Concrete pipe, bends & connections  
 Length= 22.0' Slope= 0.1164 '/'  
 Inlet Invert= 80.76', Outlet Invert= 78.20'



### Reach RCP\*: 36" RCP

Hydrograph



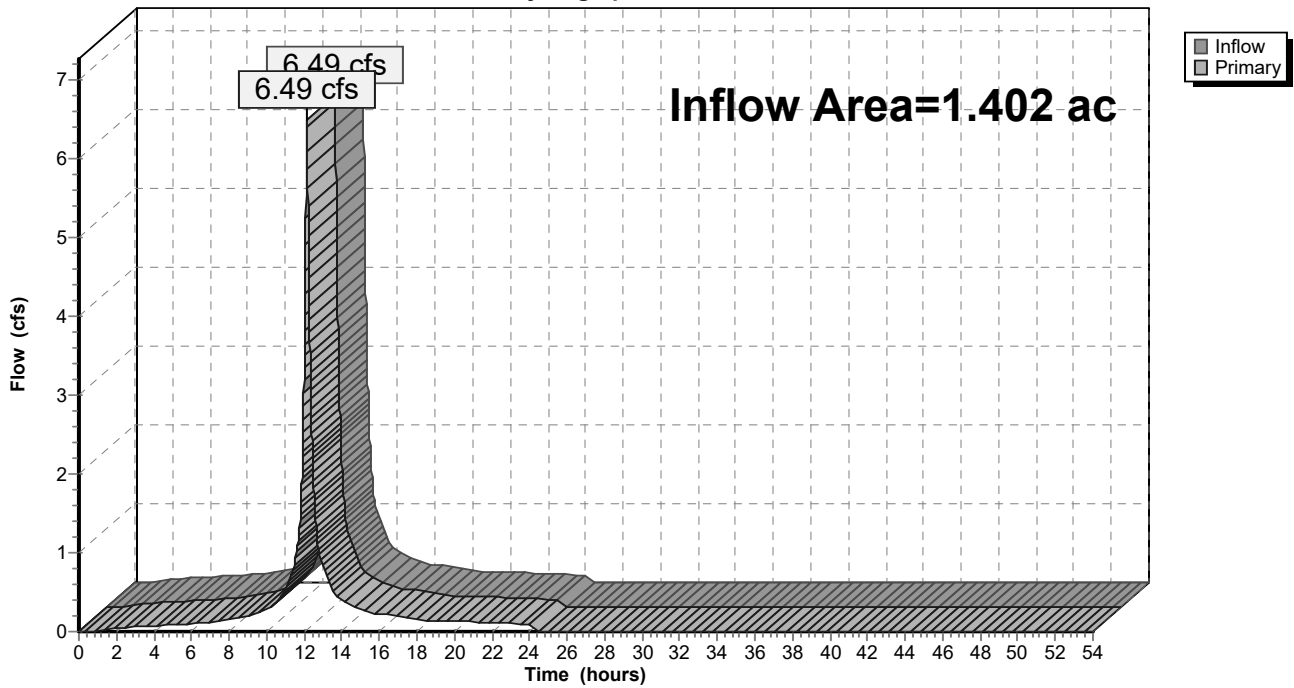
### Summary for Link MTD-A1: MTD-A1

Inflow Area = 1.402 ac, 69.33% Impervious, Inflow Depth = 5.21" for 4-MER 25YR event  
Inflow = 6.49 cfs @ 12.14 hrs, Volume= 0.608 af  
Primary = 6.49 cfs @ 12.14 hrs, Volume= 0.608 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link MTD-A1: MTD-A1

Hydrograph



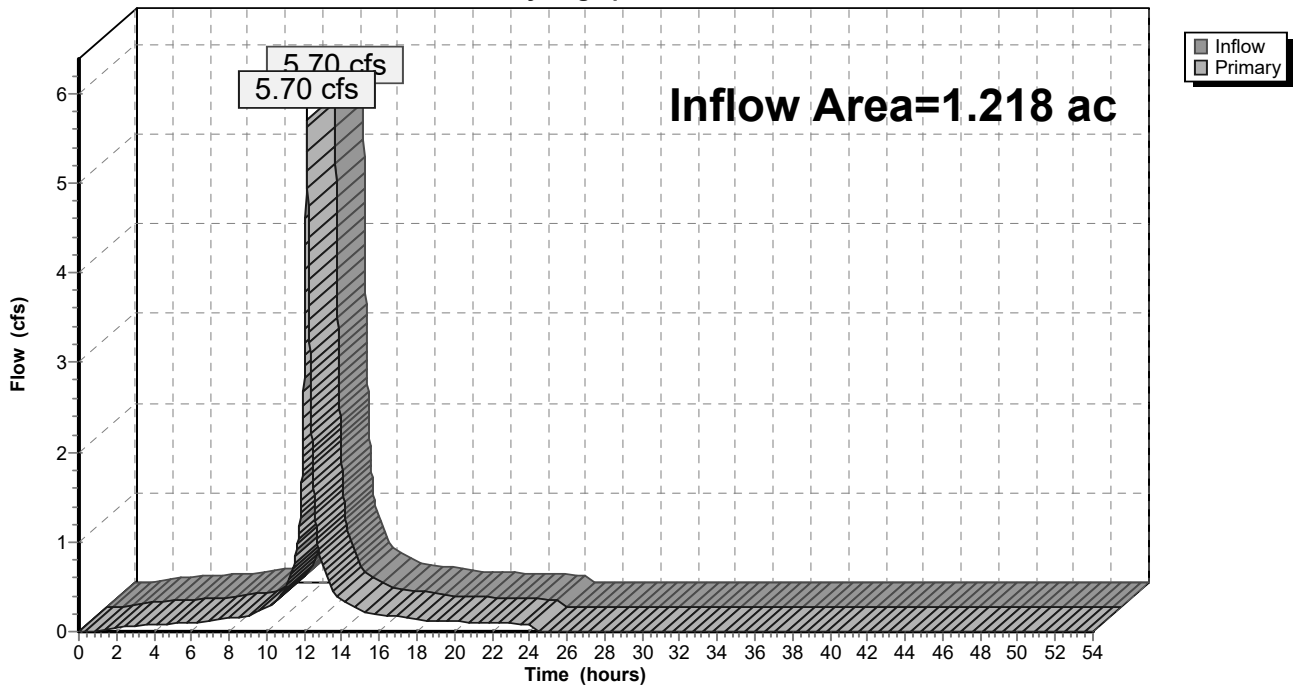
### Summary for Link MTD-A2: MTD-A2

Inflow Area = 1.218 ac, 79.80% Impervious, Inflow Depth = 5.34" for 4-MER 25YR event  
Inflow = 5.70 cfs @ 12.14 hrs, Volume= 0.542 af  
Primary = 5.70 cfs @ 12.14 hrs, Volume= 0.542 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link MTD-A2: MTD-A2

Hydrograph



### Summary for Link POA-A1\*: POA-A1\* (Rocky Brook HW)

[62] Hint: Exceeded Reach RCP\* OUTLET depth by 1.80' @ 0.00 hrs

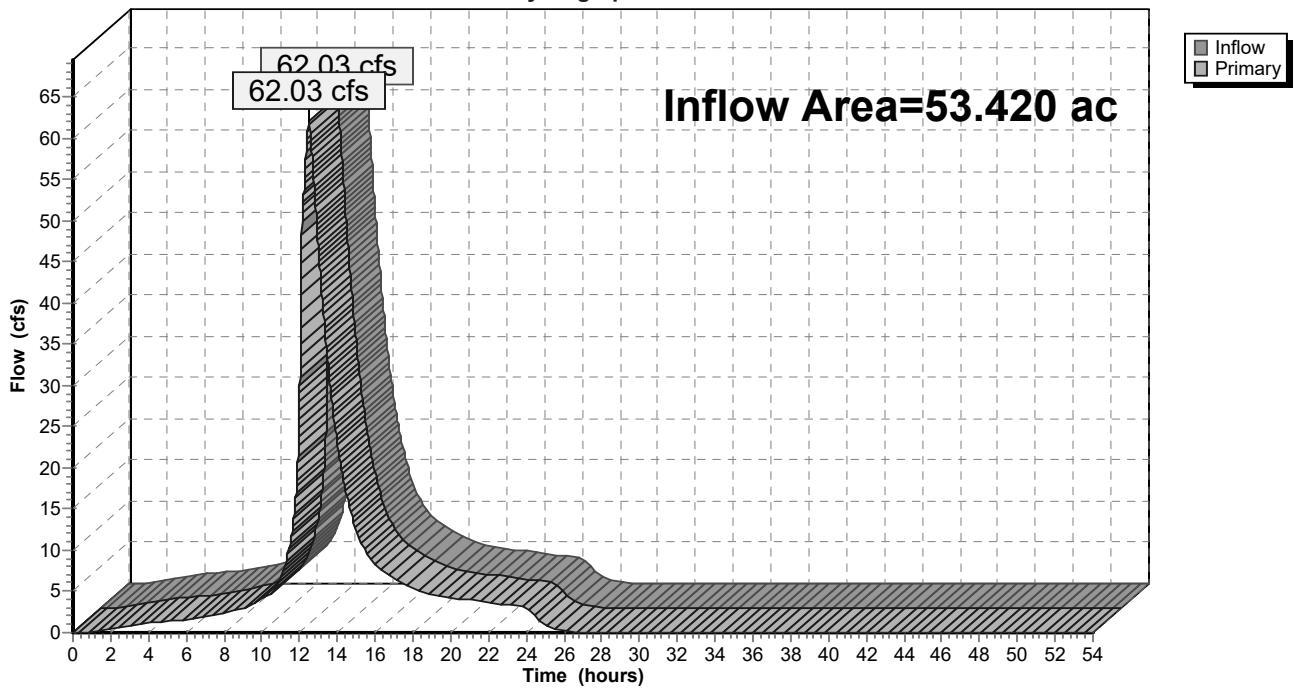
Inflow Area = 53.420 ac, 32.28% Impervious, Inflow Depth = 3.45" for 4-MER 25YR event  
Inflow = 62.03 cfs @ 12.51 hrs, Volume= 15.346 af  
Primary = 62.03 cfs @ 12.51 hrs, Volume= 15.346 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

Fixed water surface Elevation= 80.00'

### Link POA-A1\*: POA-A1\* (Rocky Brook HW)

Hydrograph



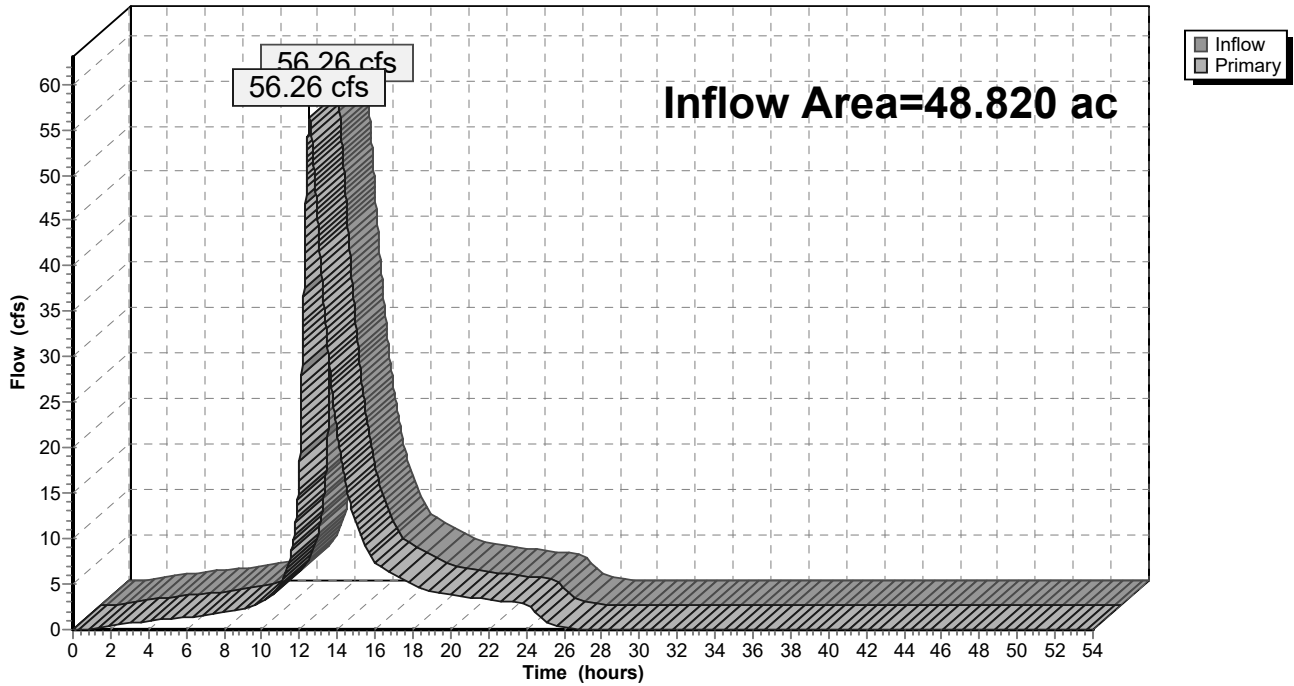
### Summary for Link POA-A1A\*: POA-A1A\*

Inflow Area = 48.820 ac, 29.29% Impervious, Inflow Depth = 3.29" for 4-MER 25YR event  
Inflow = 56.26 cfs @ 12.52 hrs, Volume= 13.380 af  
Primary = 56.26 cfs @ 12.52 hrs, Volume= 13.380 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-A1A\*: POA-A1A\*

Hydrograph



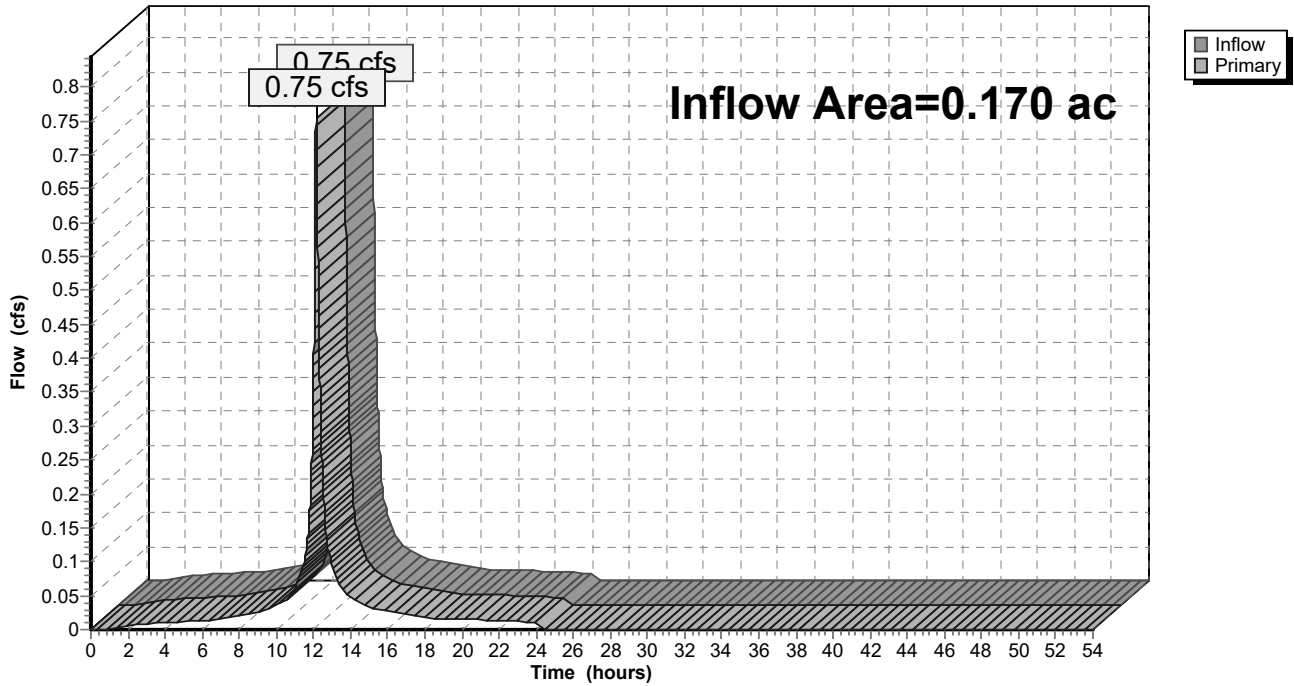
### Summary for Link POA-A2\*: POA-A2\* (BANK ST)

Inflow Area = 0.170 ac, 77.06% Impervious, Inflow Depth = 5.09" for 4-MER 25YR event  
Inflow = 0.75 cfs @ 12.14 hrs, Volume= 0.072 af  
Primary = 0.75 cfs @ 12.14 hrs, Volume= 0.072 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-A2\*: POA-A2\* (BANK ST)

Hydrograph



Time span=0.00-54.00 hrs, dt=0.01 hrs, 5401 points  
 Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. U1 as Pervious  
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment EA-10-OS\*: EA-10-OS** Runoff Area=0.480 ac 31.25% Impervious Runoff Depth=6.55"  
 Tc=6.0 min CN=79/98 Runoff=2.93 cfs 0.262 af

**Subcatchment EA-8-OS\*: EA-8-OS** Runoff Area=46.420 ac 30.00% Impervious Runoff Depth=5.03"  
 Flow Length=2,965' Tc=36.1 min CN=61/98 Runoff=84.73 cfs 19.468 af

**Subcatchment EA-9-OS\*: EA-9-OS** Runoff Area=2.220 ac 11.26% Impervious Runoff Depth=5.04"  
 Flow Length=500' Tc=6.7 min CN=69/98 Runoff=10.41 cfs 0.932 af

**Subcatchment PA-1: PA-1** Runoff Area=0.060 ac 21.67% Impervious Runoff Depth=4.31"  
 Tc=6.0 min CN=57/98 Runoff=0.24 cfs 0.022 af

**Subcatchment PA-11: PA-11** Runoff Area=0.746 ac 79.76% Impervious Runoff Depth=6.88"  
 Tc=6.0 min CN=46/98 Runoff=4.40 cfs 0.428 af

**Subcatchment PA-12: PA-12** Runoff Area=0.454 ac 1.32% Impervious Runoff Depth=5.75"  
 Tc=6.0 min CN=78/98 Runoff=2.56 cfs 0.217 af

**Subcatchment PA-2: PA-2** Runoff Area=0.060 ac 60.00% Impervious Runoff Depth=6.35"  
 Tc=6.0 min CN=61/98 Runoff=0.34 cfs 0.032 af

**Subcatchment PA-3: PA-3** Runoff Area=0.780 ac 51.28% Impervious Runoff Depth=7.76"  
 Tc=6.0 min CN=92/98 Runoff=5.33 cfs 0.504 af

**Subcatchment PA-4: PA-4** Runoff Area=1.218 ac 79.80% Impervious Runoff Depth=7.41"  
 Tc=6.0 min CN=69/98 Runoff=7.89 cfs 0.752 af

**Subcatchment PA-5: PA-5** Runoff Area=0.922 ac 89.15% Impervious Runoff Depth=7.66"  
 Tc=6.0 min CN=63/98 Runoff=6.10 cfs 0.588 af

**Subcatchment PA-6-ROW: PA-6-ROW** Runoff Area=0.120 ac 91.67% Impervious Runoff Depth=7.74"  
 Tc=6.0 min CN=61/98 Runoff=0.80 cfs 0.077 af

**Subcatchment PA-7-ROW: PA-7-ROW** Runoff Area=0.110 ac 86.36% Impervious Runoff Depth=7.51"  
 Tc=6.0 min CN=61/98 Runoff=0.71 cfs 0.069 af

**Reach RCP\*: 36" RCP** Avg. Flow Depth=1.36' Max Vel=30.80 fps Inflow=95.69 cfs 23.033 af  
 36.0" Round Pipe n=0.013 L=22.0' S=0.1164 '/' Capacity=227.52 cfs Outflow=95.69 cfs 23.033 af

**Link MTD-A1: MTD-A1** Inflow=9.03 cfs 0.850 af  
 Primary=9.03 cfs 0.850 af

**Link MTD-A2: MTD-A2** Inflow=7.89 cfs 0.752 af  
 Primary=7.89 cfs 0.752 af

**Link POA-A1\*: POA-A1\* (Rocky Brook HW)** Inflow=96.42 cfs 23.251 af  
 Primary=96.42 cfs 23.251 af

**200811\_Model**

*NRCC 24-hr C 5-MER 100YR Rainfall=8.35"*

Prepared by Maser Consulting

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**Link POA-A1A\*: POA-A1A\***

Inflow=88.42 cfs 20.499 af  
Primary=88.42 cfs 20.499 af

**Link POA-A2\*: POA-A2\* (BANK ST)**

Inflow=1.05 cfs 0.101 af  
Primary=1.05 cfs 0.101 af

**Total Runoff Area = 53.590 ac Runoff Volume = 23.351 af Average Runoff Depth = 5.23"  
67.58% Pervious = 36.215 ac 32.42% Impervious = 17.375 ac**



**Summary for Subcatchment EA-10-OS\*: EA-10-OS**

Runoff = 2.93 cfs @ 12.14 hrs, Volume= 0.262 af, Depth= 6.55"

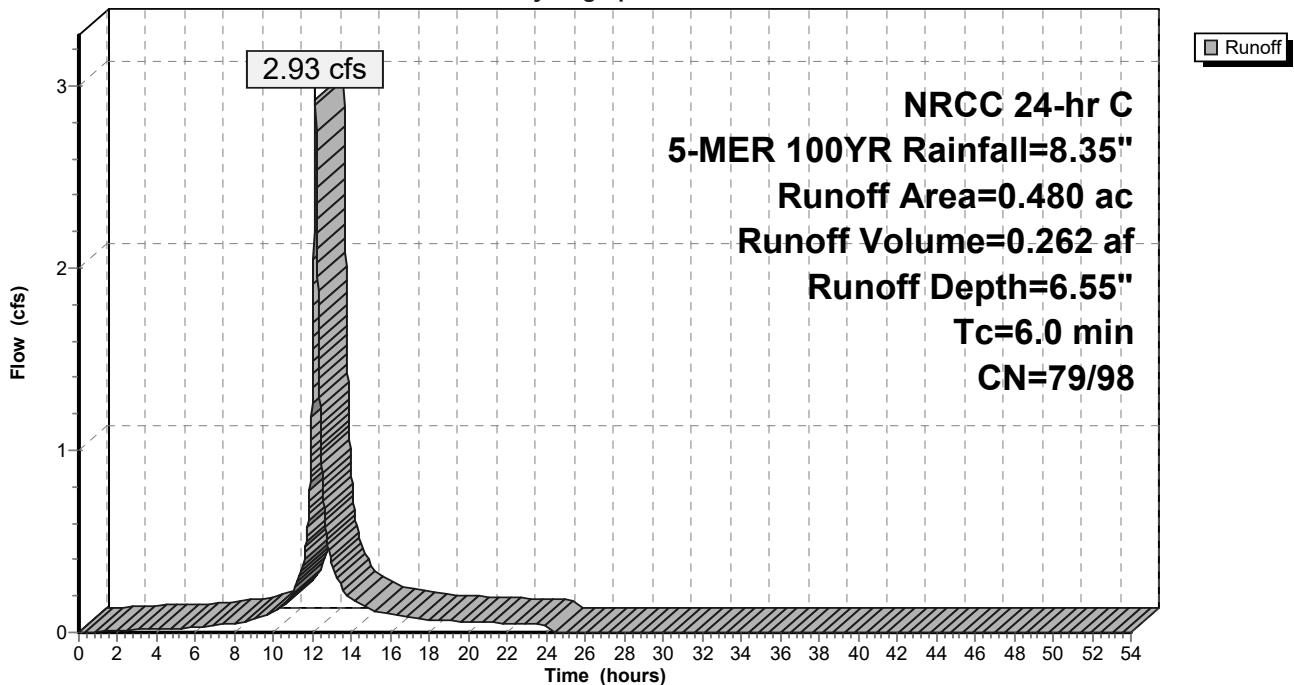
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 5-MER 100YR Rainfall=8.35"

Area (ac)	CN	Description
0.150	98	Roofs, HSG C
0.070	98	Unconnected pavement, HSG C
0.220	74	>75% Grass cover, Good, HSG C
0.040	72	Woods/grass comb., Good, HSG C
0.480	85	Weighted Average
0.330	79	68.75% Pervious Area
0.150	98	31.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EA-10-OS\*: EA-10-OS**

Hydrograph



**Summary for Subcatchment EA-8-OS\*: EA-8-OS**

[47] Hint: Peak is 146% of capacity of segment #4

Runoff = 84.73 cfs @ 12.52 hrs, Volume= 19.468 af, Depth= 5.03"

Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 5-MER 100YR Rainfall=8.35"

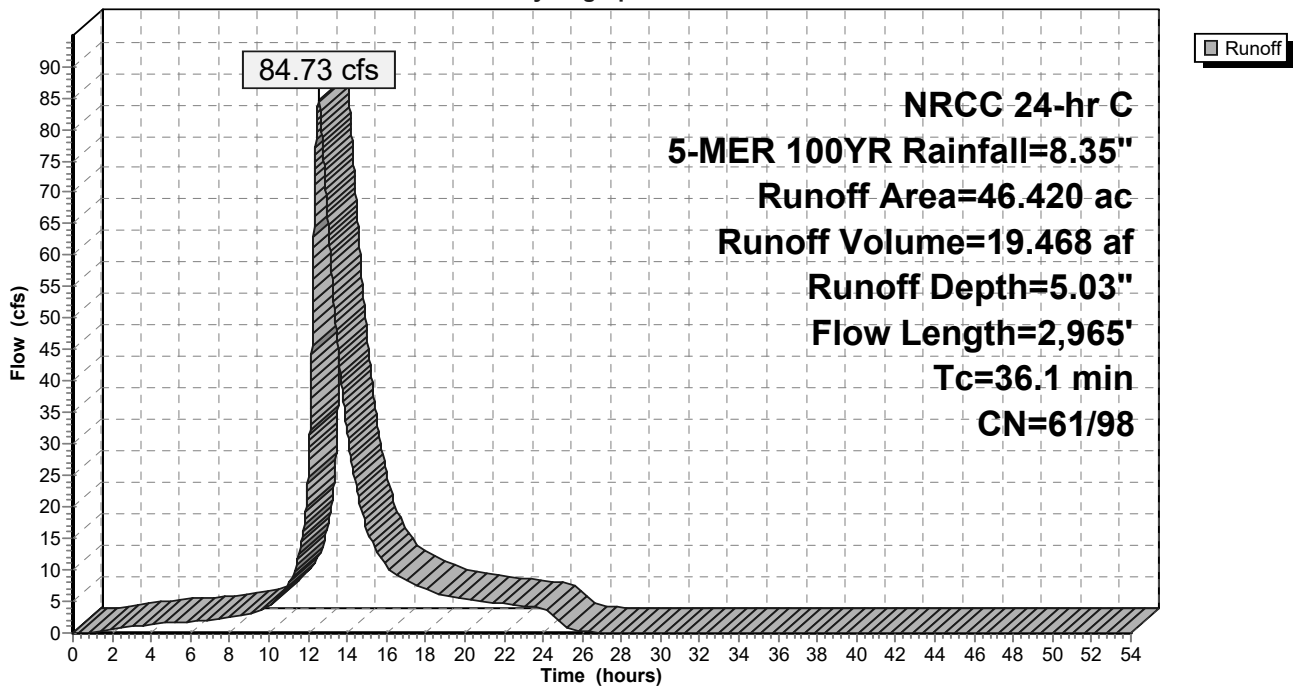
Area (ac)	CN	Description
46.420	72	1/3 acre lots, 30% imp, HSG B
32.494	61	70.00% Pervious Area
13.926	98	30.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.7	100	0.0100	0.13		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.31"
3.9	370	0.0060	1.57		<b>Shallow Concentrated Flow,</b> Paved Kv= 20.3 fps
17.5	2,100		2.00		<b>Direct Entry, Pipe Flow</b>
2.0	395	0.0170	3.22	57.93	<b>Trap/Vee/Rect Channel Flow,</b> Bot.W=4.50' D=2.00' Z= 2.0 & 2.5 ' Top.W=13.50' n= 0.070
36.1	2,965	Total			

**Subcatchment EA-8-OS\*: EA-8-OS**

Hydrograph



**Summary for Subcatchment EA-9-OS\*: EA-9-0S**

Runoff = 10.41 cfs @ 12.15 hrs, Volume= 0.932 af, Depth= 5.04"

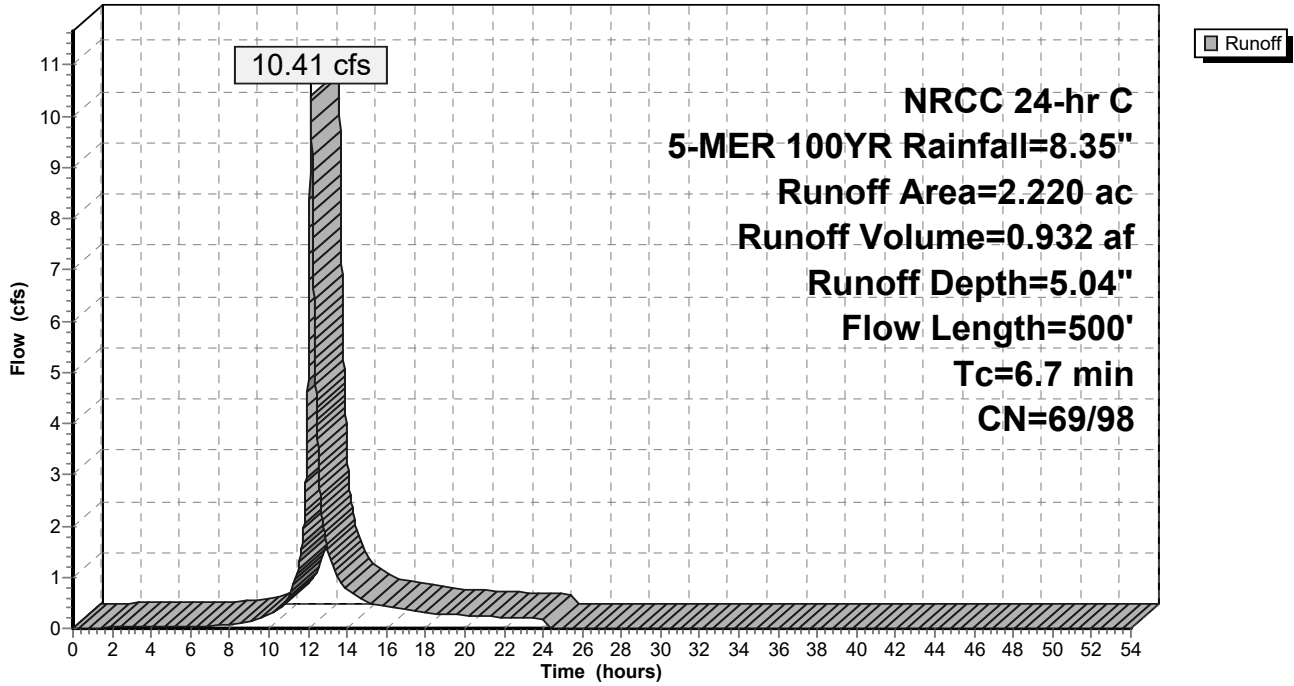
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 5-MER 100YR Rainfall=8.35"

Area (ac)	CN	Description
0.250	98	Roofs, HSG C
0.140	98	Unconnected pavement, HSG C
0.430	80	>75% Grass cover, Good, HSG D
0.870	61	>75% Grass cover, Good, HSG B
0.270	58	Woods/grass comb., Good, HSG B
0.050	79	Woods/grass comb., Good, HSG D
0.210	73	Brush, Good, HSG D
2.220	72	Weighted Average
1.970	69	88.74% Pervious Area
0.250	98	11.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	70	0.0900	0.29		<b>Sheet Flow,</b> Grass: Short n= 0.150 P2= 3.31"
1.5	190	0.0900	2.10		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
1.2	240	0.0170	3.22	57.93	<b>Trap/Vee/Rect Channel Flow,</b> Bot.W=4.50' D=2.00' Z= 2.0 & 2.5 '/' Top.W=13.50' n= 0.070
6.7	500	Total			

Subcatchment EA-9-OS\*: EA-9-0S

Hydrograph



**Summary for Subcatchment PA-1: PA-1**

Runoff = 0.24 cfs @ 12.14 hrs, Volume= 0.022 af, Depth= 4.31"

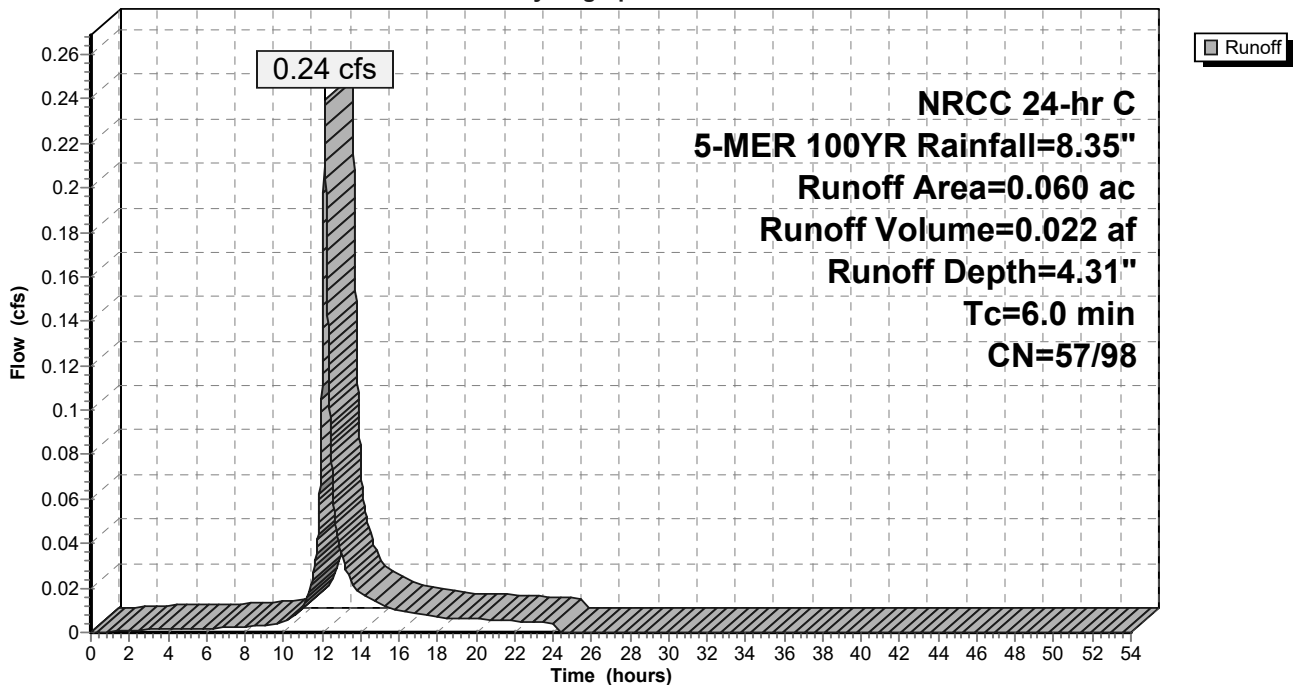
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 5-MER 100YR Rainfall=8.35"

Area (ac)	CN	Description
* 0.003	98	Sidewalks, HSG A
* 0.010	98	Sidewalks, HSG B
0.009	39	>75% Grass cover, Good, HSG A
0.038	61	>75% Grass cover, Good, HSG B
0.060	66	Weighted Average
0.047	57	78.33% Pervious Area
0.013	98	21.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PA-1: PA-1**

Hydrograph



**Summary for Subcatchment PA-11: PA-11**

Runoff = 4.40 cfs @ 12.14 hrs, Volume= 0.428 af, Depth= 6.88"

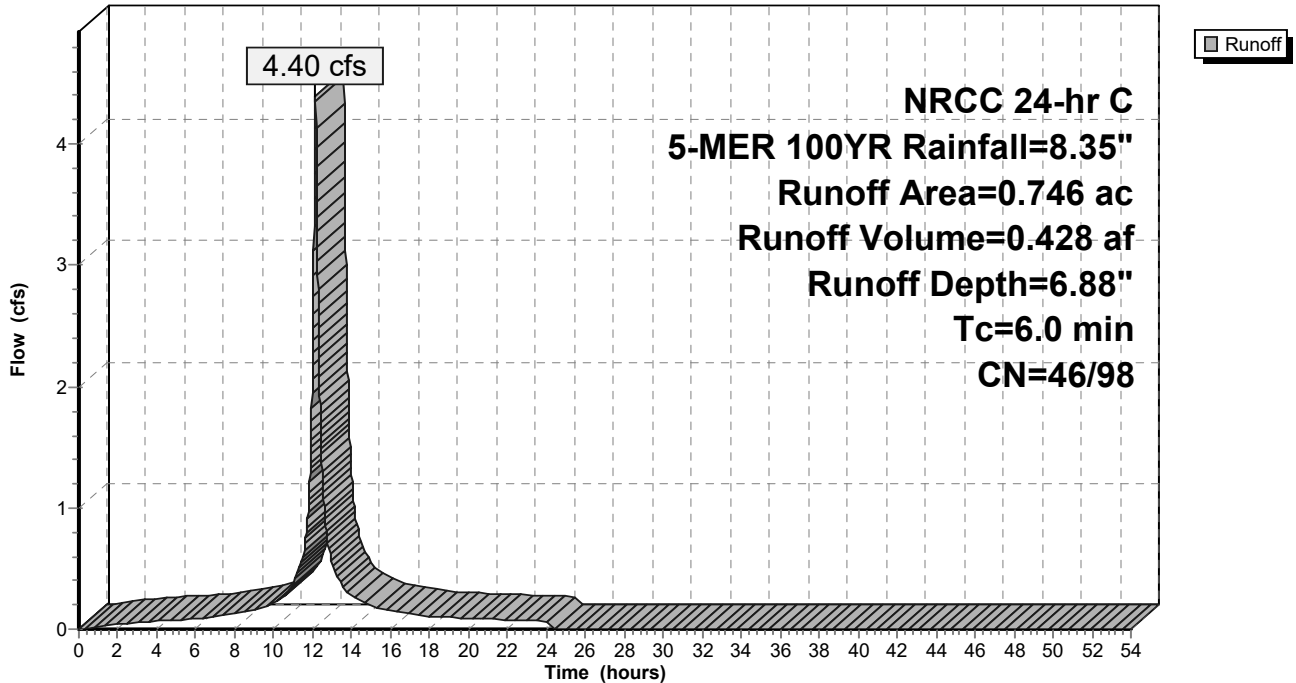
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 5-MER 100YR Rainfall=8.35"

Area (ac)	CN	Description
0.350	98	Roofs, HSG A
0.193	98	Roofs, HSG B
* 0.049	98	Sidewalks, HSG A
* 0.003	98	Sidewalks, HSG B
0.013	74	>75% Grass cover, Good, HSG C
0.024	61	>75% Grass cover, Good, HSG B
0.114	39	>75% Grass cover, Good, HSG A
<hr/>		
0.746	87	Weighted Average
0.151	46	20.24% Pervious Area
0.595	98	79.76% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PA-11: PA-11**

Hydrograph



**Summary for Subcatchment PA-12: PA-12**

Runoff = 2.56 cfs @ 12.14 hrs, Volume= 0.217 af, Depth= 5.75"

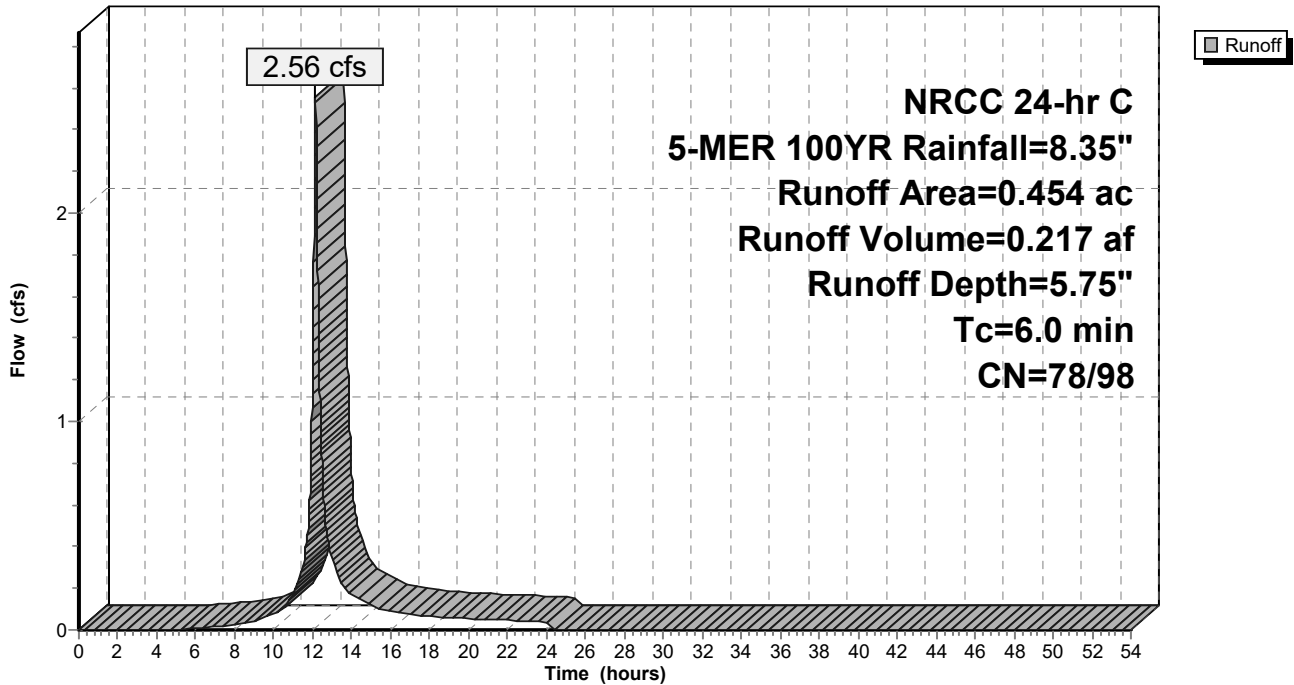
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 5-MER 100YR Rainfall=8.35"

Area (ac)	CN	Description
0.039	61	>75% Grass cover, Good, HSG B
0.006	98	Paved parking, HSG D
0.409	80	>75% Grass cover, Good, HSG D
0.454	79	Weighted Average
0.448	78	98.68% Pervious Area
0.006	98	1.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PA-12: PA-12**

Hydrograph



**Summary for Subcatchment PA-2: PA-2**

Runoff = 0.34 cfs @ 12.14 hrs, Volume= 0.032 af, Depth= 6.35"

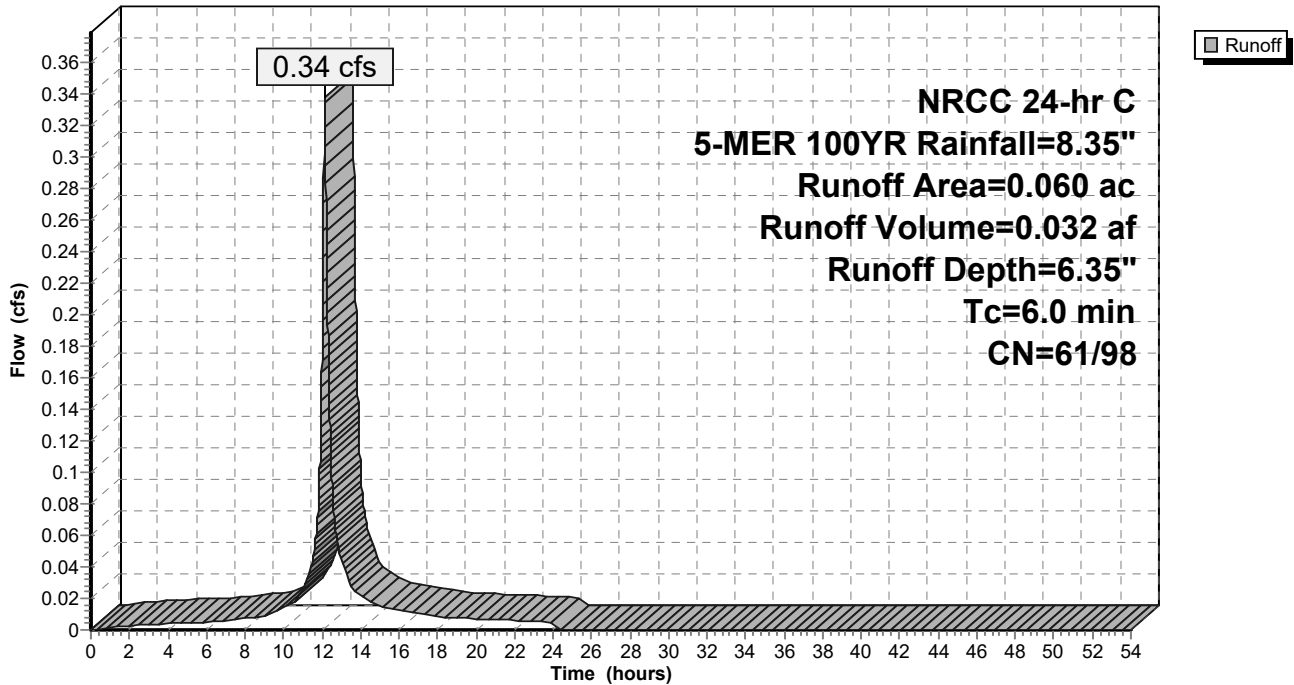
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 5-MER 100YR Rainfall=8.35"

Area (ac)	CN	Description
* 0.018	98	Sidewalks, HSG A
* 0.018	98	Sidewalks, HSG B
0.024	61	>75% Grass cover, Good, HSG B
0.060	83	Weighted Average
0.024	61	40.00% Pervious Area
0.036	98	60.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PA-2: PA-2**

Hydrograph





**Summary for Subcatchment PA-3: PA-3**

Runoff = 5.33 cfs @ 12.14 hrs, Volume= 0.504 af, Depth= 7.76"

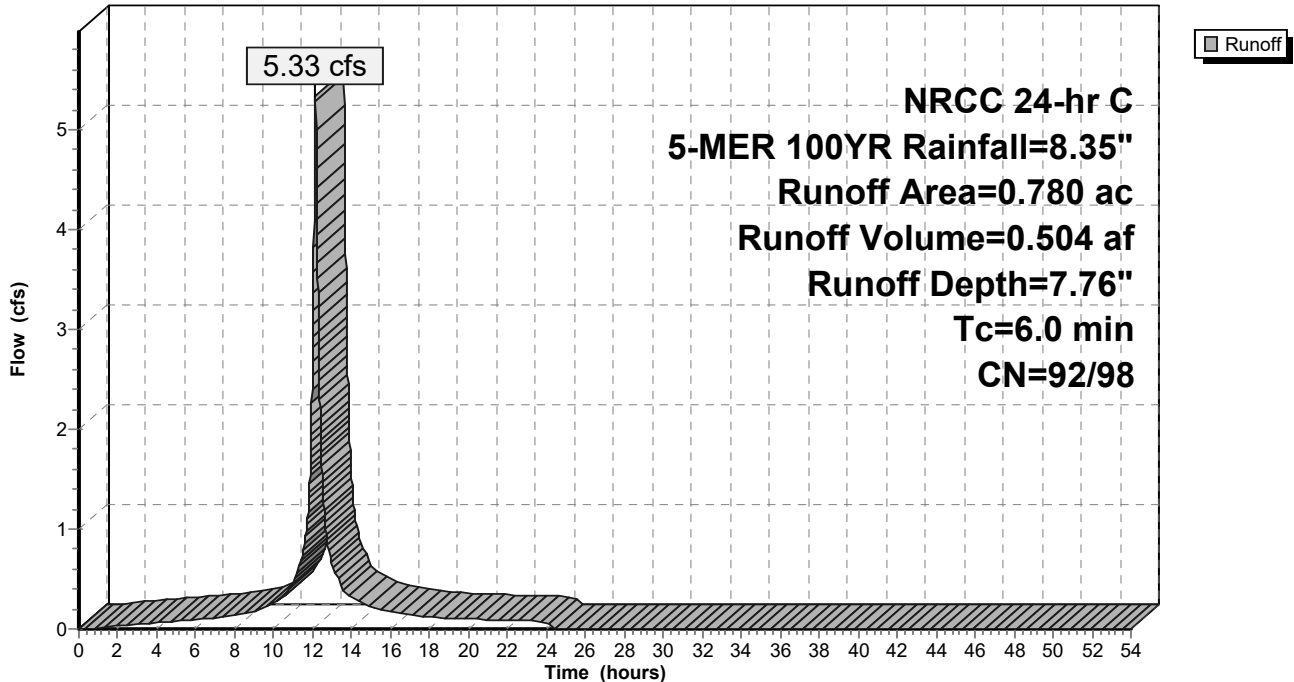
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 5-MER 100YR Rainfall=8.35"

Area (ac)	CN	Description
0.019	98	Roofs, HSG A
0.361	98	Roofs, HSG C
* 0.020	98	Sidewalks HSG C
0.100	74	>75% Grass cover, Good, HSG C
0.280	98	Unconnected roofs, HSG C
0.780	95	Weighted Average
0.380	92	48.72% Pervious Area
0.400	98	51.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PA-3: PA-3**

Hydrograph



**Summary for Subcatchment PA-4: PA-4**

Runoff = 7.89 cfs @ 12.14 hrs, Volume= 0.752 af, Depth= 7.41"

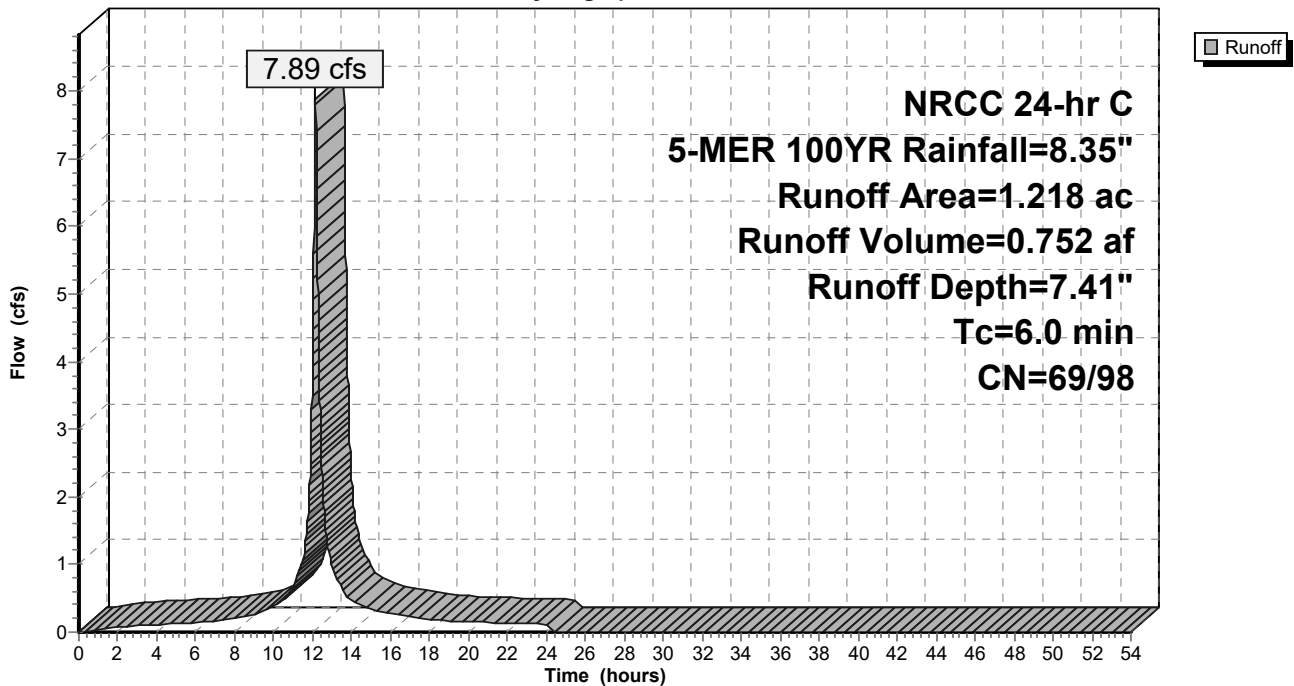
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 5-MER 100YR Rainfall=8.35"

Area (ac)	CN	Description
0.314	98	Paved parking, HSG A
0.112	98	Paved parking, HSG B
0.450	98	Paved parking, HSG C
* 0.017	98	Sidewalks, HSG A
* 0.079	98	Sidewalks, HSG C
0.152	74	>75% Grass cover, Good, HSG C
0.094	61	>75% Grass cover, Good, HSG B
1.218	92	Weighted Average
0.246	69	20.20% Pervious Area
0.972	98	79.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PA-4: PA-4**

Hydrograph



**Summary for Subcatchment PA-5: PA-5**

Runoff = 6.10 cfs @ 12.14 hrs, Volume= 0.588 af, Depth= 7.66"

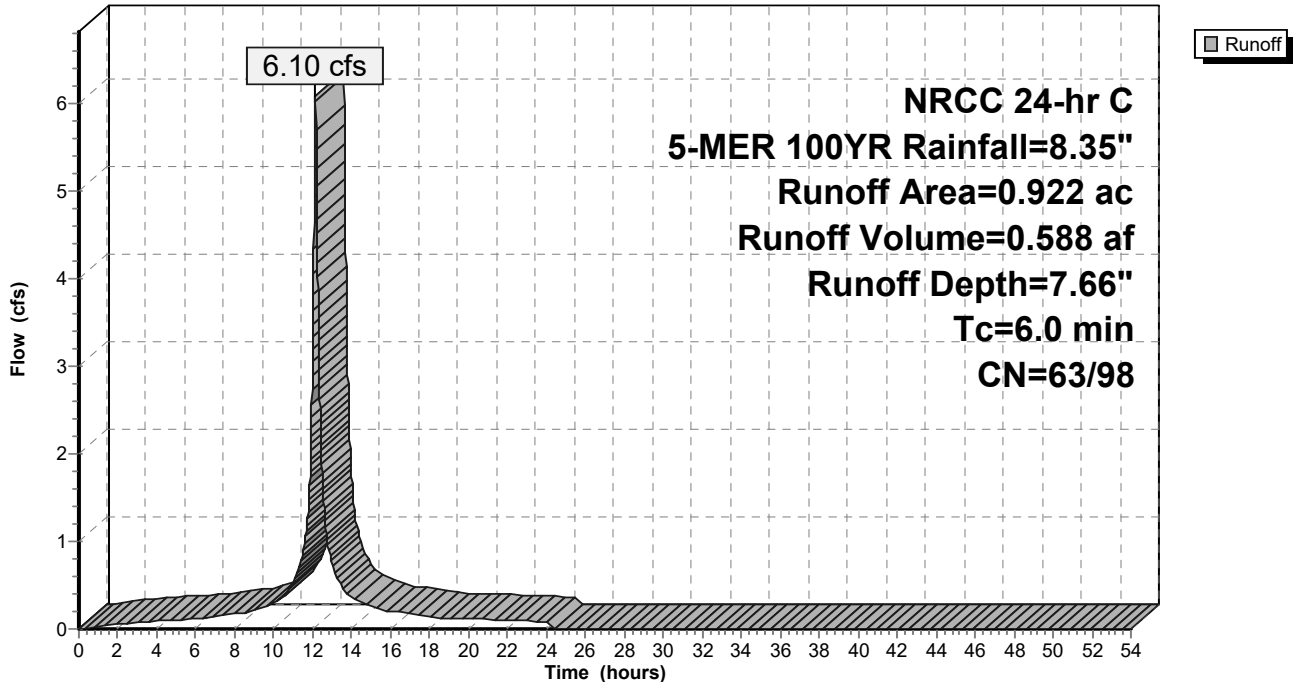
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 5-MER 100YR Rainfall=8.35"

Area (ac)	CN	Description
0.626	98	Paved parking, HSG B
* 0.007	98	Sidewalks, HSG B
0.189	98	Paved parking, HSG C
0.015	74	>75% Grass cover, Good, HSG C
0.085	61	>75% Grass cover, Good, HSG B
0.922	94	Weighted Average
0.100	63	10.85% Pervious Area
0.822	98	89.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PA-5: PA-5**

Hydrograph



**Summary for Subcatchment PA-6-ROW: PA-6-ROW**

Runoff = 0.80 cfs @ 12.14 hrs, Volume= 0.077 af, Depth= 7.74"

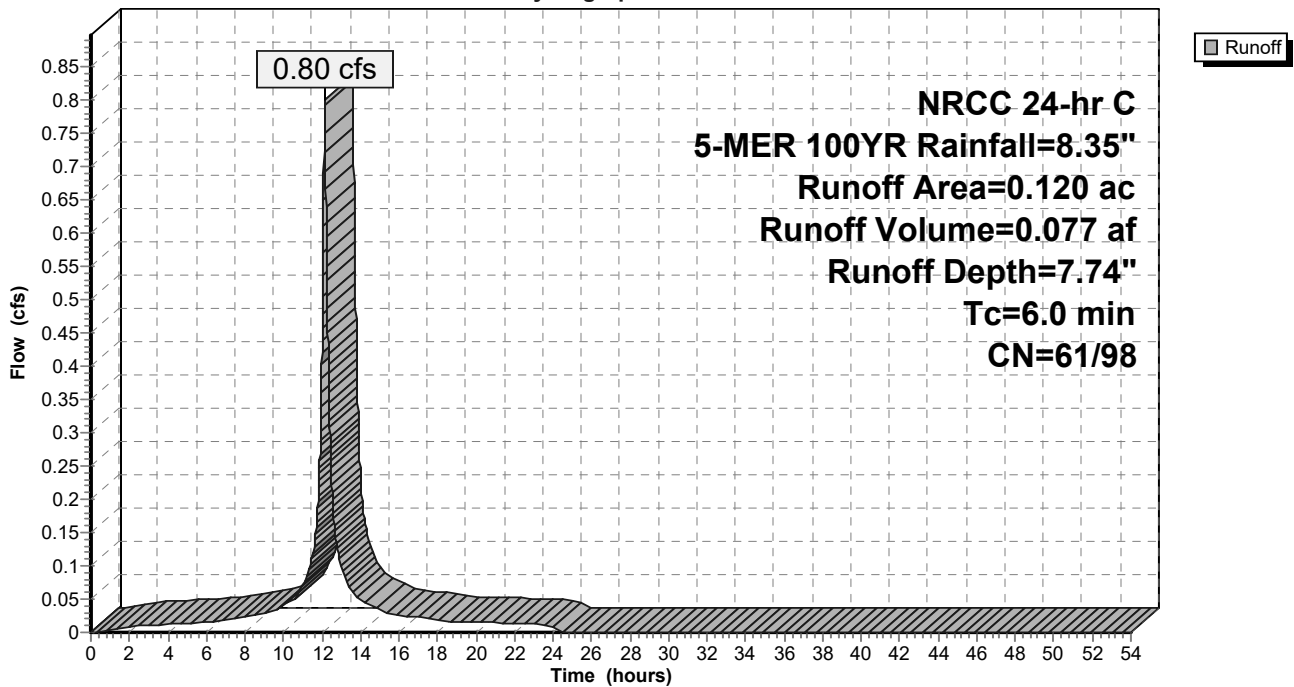
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 5-MER 100YR Rainfall=8.35"

Area (ac)	CN	Description
0.110	98	Paved parking, HSG A
0.010	61	>75% Grass cover, Good, HSG B
0.120	95	Weighted Average
0.010	61	8.33% Pervious Area
0.110	98	91.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PA-6-ROW: PA-6-ROW**

Hydrograph



**Summary for Subcatchment PA-7-ROW: PA-7-ROW**

Runoff = 0.71 cfs @ 12.14 hrs, Volume= 0.069 af, Depth= 7.51"

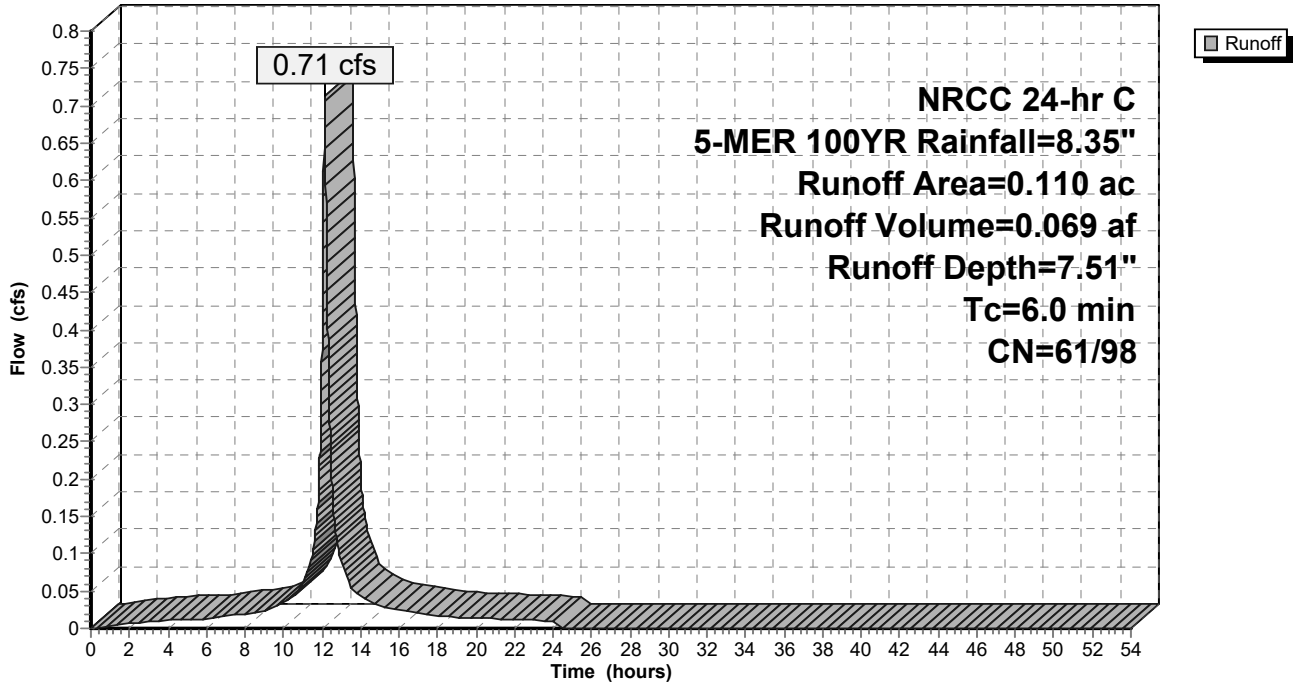
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 5-MER 100YR Rainfall=8.35"

Area (ac)	CN	Description
0.095	98	Paved parking, HSG A
0.015	61	>75% Grass cover, Good, HSG B
0.110	93	Weighted Average
0.015	61	13.64% Pervious Area
0.095	98	86.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PA-7-ROW: PA-7-ROW**

Hydrograph



### Summary for Reach RCP\*: 36" RCP

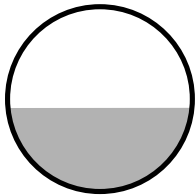
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 52.966 ac, 32.55% Impervious, Inflow Depth = 5.22" for 5-MER 100YR event  
 Inflow = 95.69 cfs @ 12.51 hrs, Volume= 23.033 af  
 Outflow = 95.69 cfs @ 12.51 hrs, Volume= 23.033 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs  
 Max. Velocity= 30.80 fps, Min. Travel Time= 0.0 min  
 Avg. Velocity = 13.14 fps, Avg. Travel Time= 0.0 min

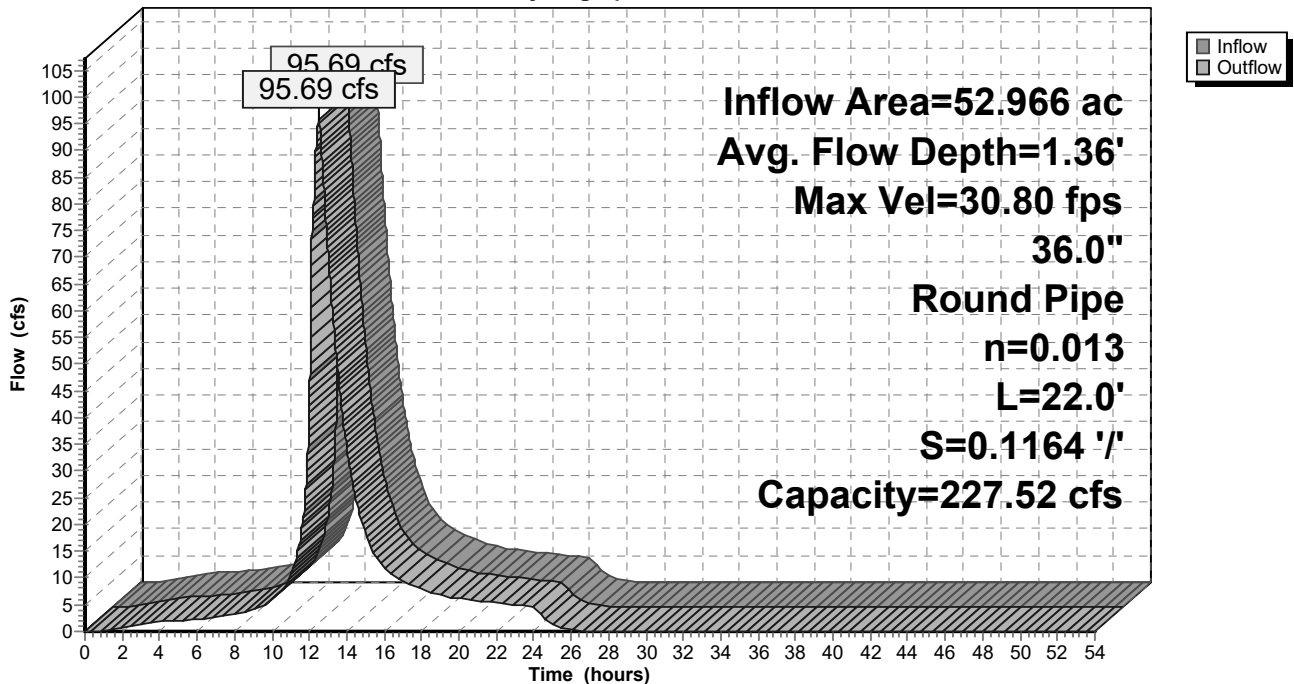
Peak Storage= 68 cf @ 12.51 hrs  
 Average Depth at Peak Storage= 1.36' , Surface Width= 2.99'  
 Bank-Full Depth= 3.00' Flow Area= 7.1 sf, Capacity= 227.52 cfs

36.0" Round Pipe  
 n= 0.013 Concrete pipe, bends & connections  
 Length= 22.0' Slope= 0.1164 '/'  
 Inlet Invert= 80.76', Outlet Invert= 78.20'



### Reach RCP\*: 36" RCP

Hydrograph

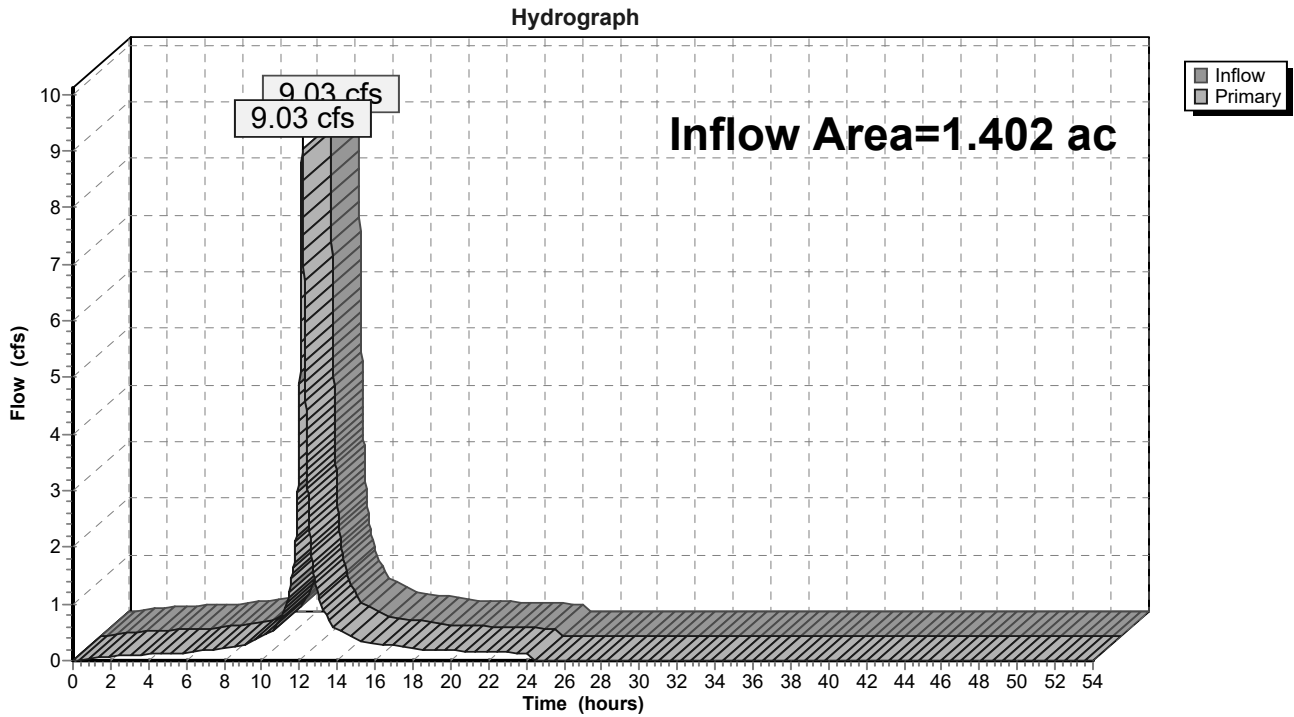


### Summary for Link MTD-A1: MTD-A1

Inflow Area = 1.402 ac, 69.33% Impervious, Inflow Depth = 7.28" for 5-MER 100YR event  
Inflow = 9.03 cfs @ 12.14 hrs, Volume= 0.850 af  
Primary = 9.03 cfs @ 12.14 hrs, Volume= 0.850 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link MTD-A1: MTD-A1



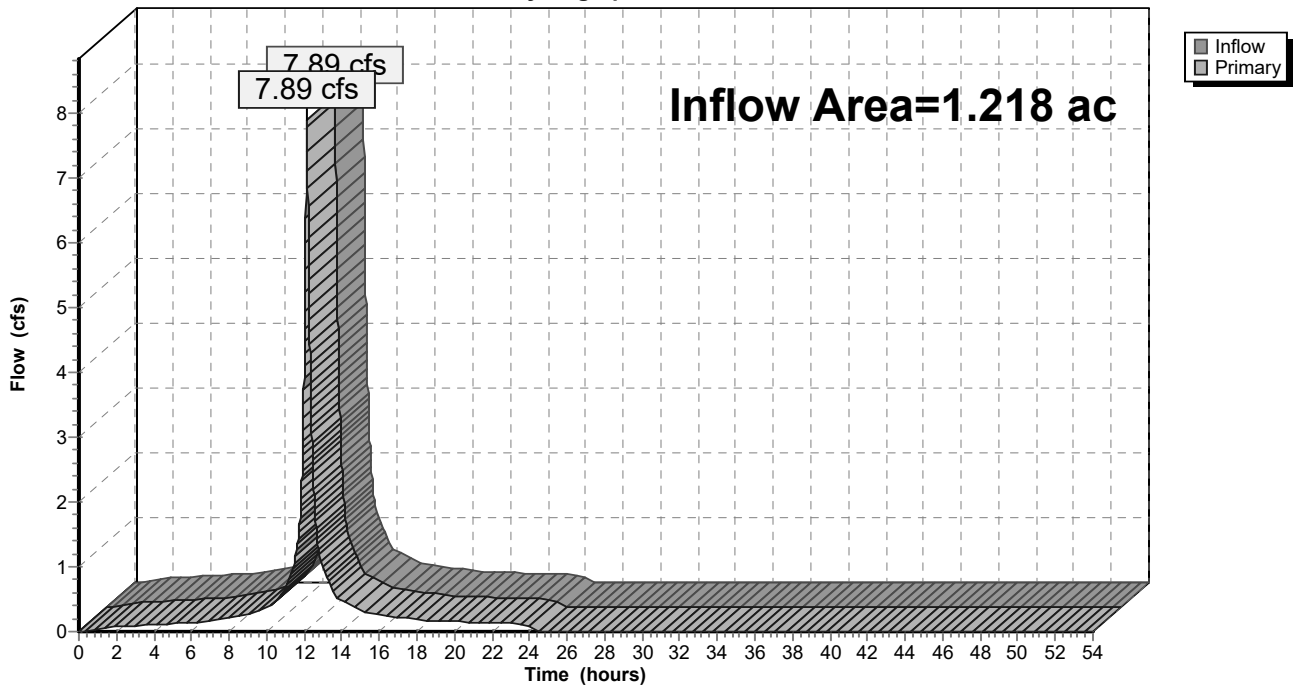
### Summary for Link MTD-A2: MTD-A2

Inflow Area = 1.218 ac, 79.80% Impervious, Inflow Depth = 7.41" for 5-MER 100YR event  
Inflow = 7.89 cfs @ 12.14 hrs, Volume= 0.752 af  
Primary = 7.89 cfs @ 12.14 hrs, Volume= 0.752 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link MTD-A2: MTD-A2

Hydrograph





### Summary for Link POA-A1\*: POA-A1\* (Rocky Brook HW)

[62] Hint: Exceeded Reach RCP\* OUTLET depth by 1.80' @ 0.00 hrs

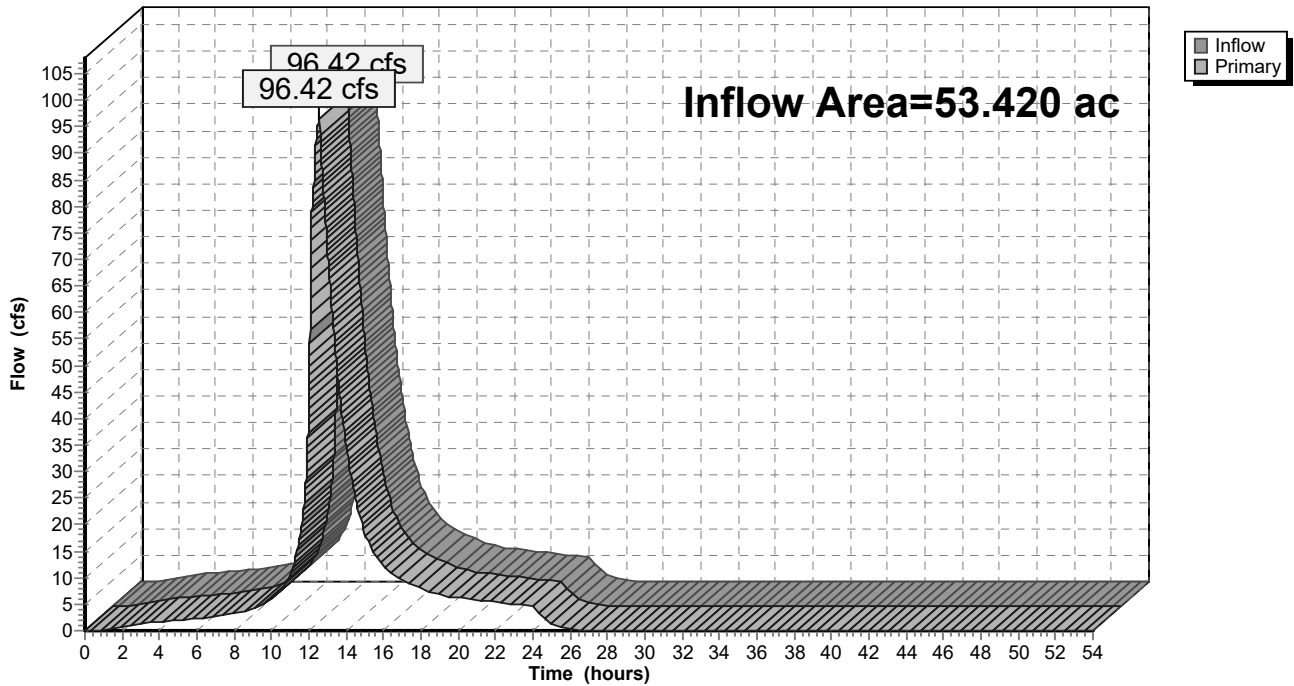
Inflow Area = 53.420 ac, 32.28% Impervious, Inflow Depth = 5.22" for 5-MER 100YR event  
Inflow = 96.42 cfs @ 12.51 hrs, Volume= 23.251 af  
Primary = 96.42 cfs @ 12.51 hrs, Volume= 23.251 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

Fixed water surface Elevation= 80.00'

### Link POA-A1\*: POA-A1\* (Rocky Brook HW)

Hydrograph



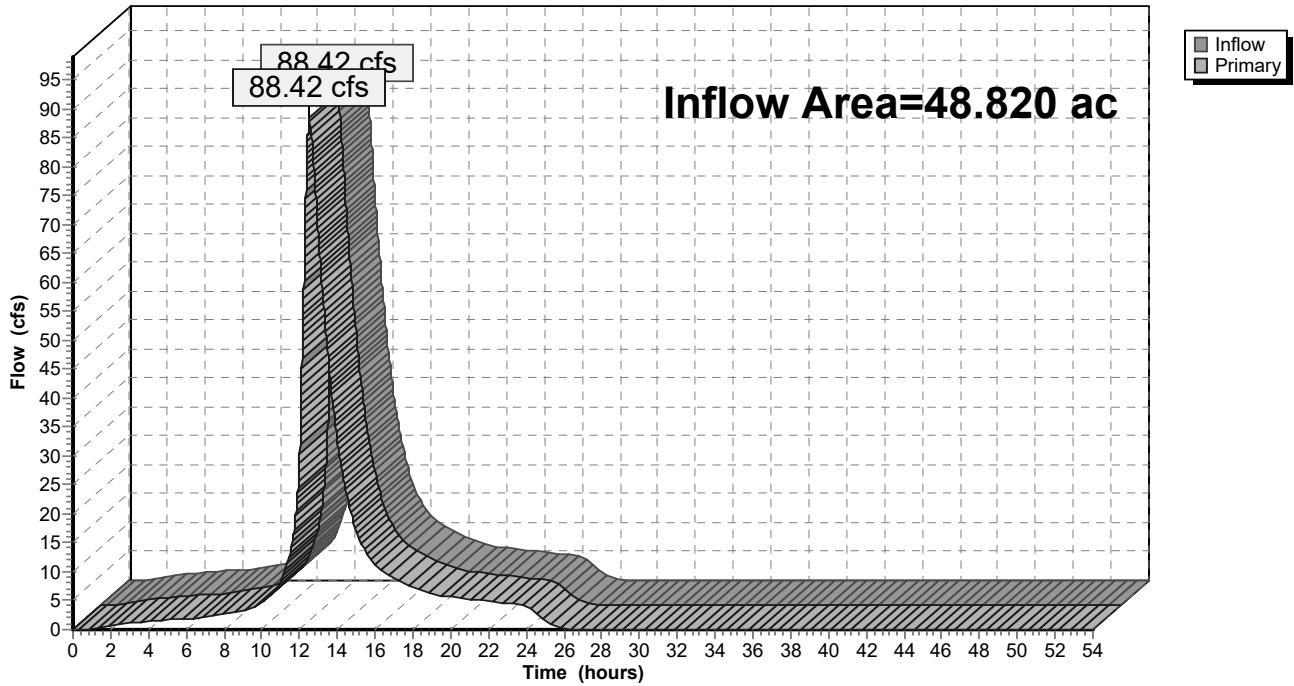
### Summary for Link POA-A1A\*: POA-A1A\*

Inflow Area = 48.820 ac, 29.29% Impervious, Inflow Depth = 5.04" for 5-MER 100YR event  
Inflow = 88.42 cfs @ 12.52 hrs, Volume= 20.499 af  
Primary = 88.42 cfs @ 12.52 hrs, Volume= 20.499 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-A1A\*: POA-A1A\*

Hydrograph

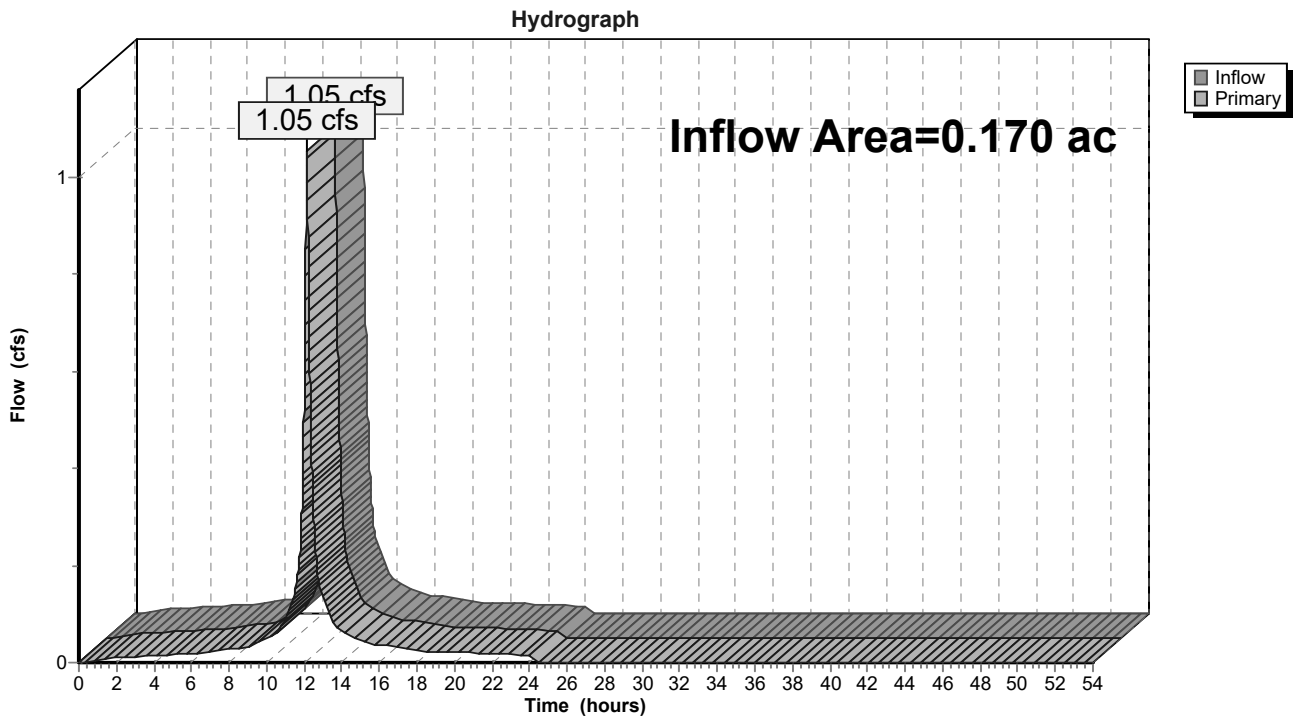


### Summary for Link POA-A2\*: POA-A2\* (BANK ST)

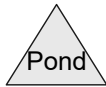
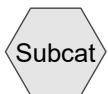
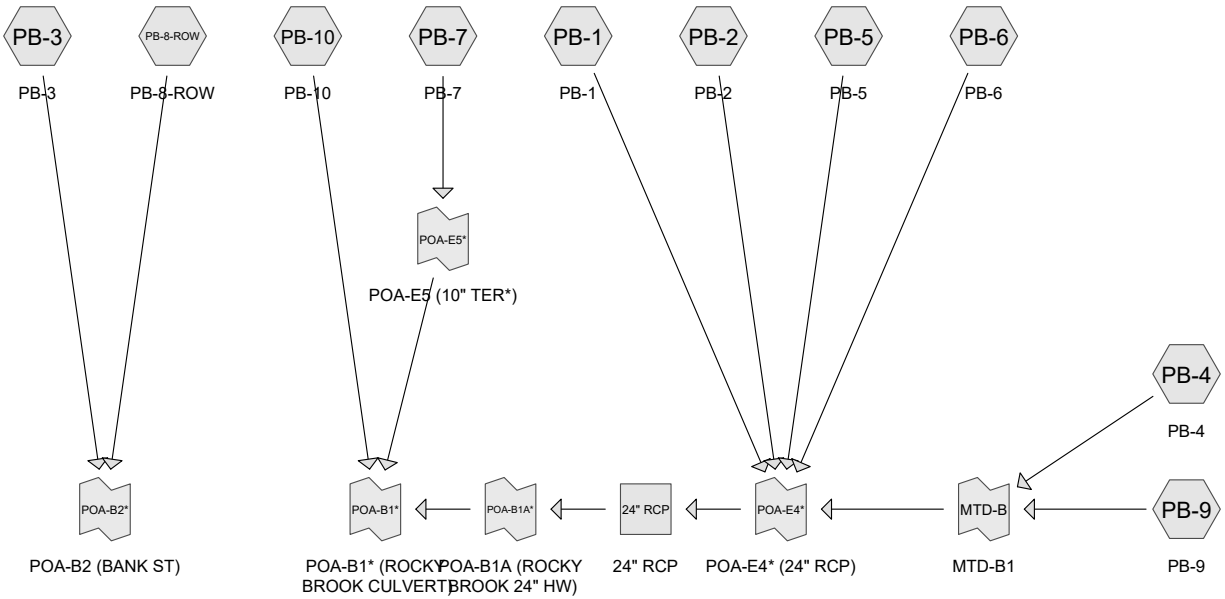
Inflow Area = 0.170 ac, 77.06% Impervious, Inflow Depth = 7.10" for 5-MER 100YR event  
Inflow = 1.05 cfs @ 12.14 hrs, Volume= 0.101 af  
Primary = 1.05 cfs @ 12.14 hrs, Volume= 0.101 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-A2\*: POA-A2\* (BANK ST)



**TRACT B PROPOSED**



**Routing Diagram for 200811\_Model**  
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## **200811\_Model**

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### **Project Notes**

Rainfall events imported from "200330\_Analysis.hcp"

## 200811\_Model

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### Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-MER 1YR	NRCC 24-hr	C	Default	24.00	1	2.74	2
2	2-MER 2YR	NRCC 24-hr	C	Default	24.00	1	3.31	2
3	3-MER 10YR	NRCC 24-hr	C	Default	24.00	1	5.02	2
4	4-MER 25YR	NRCC 24-hr	C	Default	24.00	1	6.20	2
5	5-MER 100YR	NRCC 24-hr	C	Default	24.00	1	8.35	2
6	NJDEP WQ	NJ DEP 2-hr		Default	2.00	1	1.25	2

**Area Listing (selected nodes)**

Area (acres)	CN	Description (subcatchment-numbers)
0.708	74	>75% Grass cover, Good, HSG C (PB-1, PB-10)
0.425	80	>75% Grass cover, Good, HSG D (PB-3, PB-6)
0.720	98	Paved parking, HSG A (PB-9)
0.650	98	Paved parking, HSG D (PB-4, PB-8-ROW)
0.105	98	Pool/Patio (PB-1)
1.550	98	Roofs, HSG D (PB-2, PB-5, PB-7)
0.092	98	Sidewalks, HSG D (PB-3, PB-6)
0.030	98	Unconnected roofs, HSG D (PB-6)
<b>4.280</b>	<b>92</b>	<b>TOTAL AREA</b>

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### Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.720	HSG A	PB-9
0.000	HSG B	
0.708	HSG C	PB-1, PB-10
2.747	HSG D	PB-2, PB-3, PB-4, PB-5, PB-6, PB-7, PB-8-ROW
0.105	Other	PB-1
<b>4.280</b>		<b>TOTAL AREA</b>



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**Ground Covers (selected nodes)**

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.708	0.425	0.000	1.133	>75% Grass cover, Good	PB-1, PB-10, PB-3, PB-6
0.720	0.000	0.000	0.650	0.000	1.370	Paved parking	PB-4, PB-8-RO W, PB-9
0.000	0.000	0.000	0.000	0.105	0.105	Pool/Patio	PB-1
0.000	0.000	0.000	1.550	0.000	1.550	Roofs	PB-2, PB-5, PB-7
0.000	0.000	0.000	0.092	0.000	0.092	Sidewalks	PB-3, PB-6
0.000	0.000	0.000	0.030	0.000	0.030	Unconnected roofs	PB-6
<b>0.720</b>	<b>0.000</b>	<b>0.708</b>	<b>2.747</b>	<b>0.105</b>	<b>4.280</b>	<b>TOTAL AREA</b>	

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**Pipe Listing (selected nodes)**

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	24" RCP	75.22	74.61	36.0	0.0169	0.013	24.0	0.0	0.0

Time span=0.00-54.00 hrs, dt=0.01 hrs, 5401 points  
 Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious  
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

<b>Subcatchment PB-1: PB-1</b>	Runoff Area=0.253 ac 41.50% Impervious Runoff Depth=1.48" Tc=6.0 min CN=74/98 Runoff=0.34 cfs 0.031 af
<b>Subcatchment PB-10: PB-10</b>	Runoff Area=0.560 ac 0.00% Impervious Runoff Depth=0.75" Tc=6.0 min CN=74/0 Runoff=0.38 cfs 0.035 af
<b>Subcatchment PB-2: PB-2</b>	Runoff Area=0.830 ac 100.00% Impervious Runoff Depth=2.51" Tc=6.0 min CN=0/98 Runoff=1.86 cfs 0.174 af
<b>Subcatchment PB-3: PB-3</b>	Runoff Area=0.170 ac 23.53% Impervious Runoff Depth=1.40" Tc=6.0 min CN=80/98 Runoff=0.22 cfs 0.020 af
<b>Subcatchment PB-4: PB-4</b>	Runoff Area=0.500 ac 100.00% Impervious Runoff Depth=2.51" Tc=6.0 min CN=0/98 Runoff=1.12 cfs 0.105 af
<b>Subcatchment PB-5: PB-5</b>	Runoff Area=0.530 ac 100.00% Impervious Runoff Depth=2.51" Tc=6.0 min CN=0/98 Runoff=1.19 cfs 0.111 af
<b>Subcatchment PB-6: PB-6</b>	Runoff Area=0.377 ac 13.79% Impervious Runoff Depth=1.36" Tc=6.0 min CN=82/98 Runoff=0.50 cfs 0.043 af
<b>Subcatchment PB-7: PB-7</b>	Runoff Area=0.190 ac 100.00% Impervious Runoff Depth=2.51" Tc=6.0 min CN=0/98 Runoff=0.43 cfs 0.040 af
<b>Subcatchment PB-8-ROW: PB-8-ROW</b>	Runoff Area=0.150 ac 100.00% Impervious Runoff Depth=2.51" Tc=6.0 min CN=0/98 Runoff=0.34 cfs 0.031 af
<b>Subcatchment PB-9: PB-9</b>	Runoff Area=0.720 ac 100.00% Impervious Runoff Depth=2.51" Tc=6.0 min CN=0/98 Runoff=1.61 cfs 0.151 af
<b>Reach 24" RCP: 24" RCP</b>	Avg. Flow Depth=0.64' Max Vel=7.56 fps Inflow=6.61 cfs 0.613 af 24.0" Round Pipe n=0.013 L=36.0' S=0.0169 '/' Capacity=29.45 cfs Outflow=6.61 cfs 0.613 af
<b>Link MTD-B: MTD-B1</b>	Inflow=2.74 cfs 0.255 af Primary=2.74 cfs 0.255 af
<b>Link POA-B1*: POA-B1* (ROCKY BROOK CULVERT)</b>	Inflow=7.42 cfs 0.688 af Primary=7.42 cfs 0.688 af
<b>Link POA-B1A*: POA-B1A (ROCKY BROOK 24" HW)</b>	Inflow=6.61 cfs 0.613 af Primary=6.61 cfs 0.613 af
<b>Link POA-B2*: POA-B2 (BANK ST)</b>	Inflow=0.56 cfs 0.051 af Primary=0.56 cfs 0.051 af
<b>Link POA-E4*: POA-E4* (24" RCP)</b>	Inflow=6.61 cfs 0.613 af Primary=6.61 cfs 0.613 af

**200811\_Model**

Prepared by Maser Consulting

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NRCC 24-hr C 1-MER 1YR Rainfall=2.74"

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**Link POA-E5\*: POA-E5 (10" TER\*)**

Inflow=0.43 cfs 0.040 af  
Primary=0.43 cfs 0.040 af

**Total Runoff Area = 4.280 ac   Runoff Volume = 0.739 af   Average Runoff Depth = 2.07"**  
**27.17% Pervious = 1.163 ac   72.83% Impervious = 3.117 ac**

**Summary for Subcatchment PB-1: PB-1**

Runoff = 0.34 cfs @ 12.14 hrs, Volume= 0.031 af, Depth= 1.48"

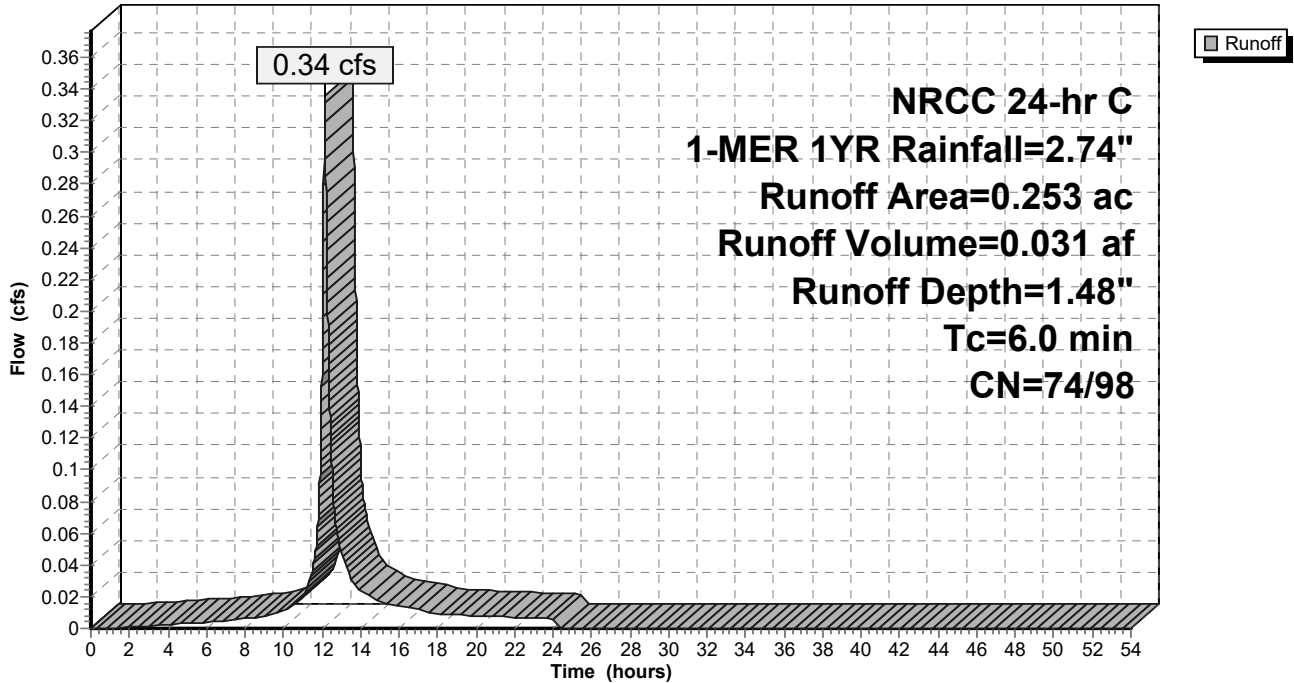
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 1-MER 1YR Rainfall=2.74"

Area (ac)	CN	Description
* 0.105	98	Pool/Patio
0.148	74	>75% Grass cover, Good, HSG C
0.253	84	Weighted Average
0.148	74	58.50% Pervious Area
0.105	98	41.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PB-1: PB-1**

Hydrograph



**Summary for Subcatchment PB-10: PB-10**

Runoff = 0.38 cfs @ 12.15 hrs, Volume= 0.035 af, Depth= 0.75"

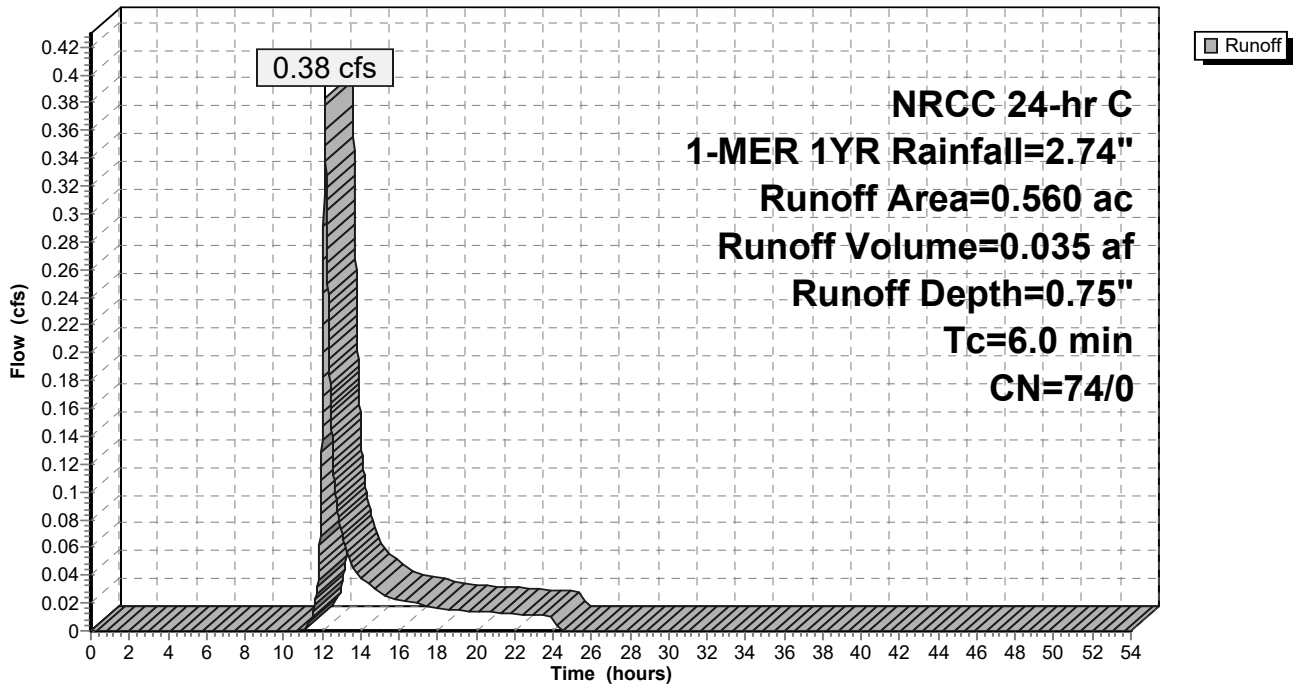
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 1-MER 1YR Rainfall=2.74"

Area (ac)	CN	Description
0.560	74	>75% Grass cover, Good, HSG C
0.560	74	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PB-10: PB-10**

Hydrograph



**Summary for Subcatchment PB-2: PB-2**

Runoff = 1.86 cfs @ 12.14 hrs, Volume= 0.174 af, Depth= 2.51"

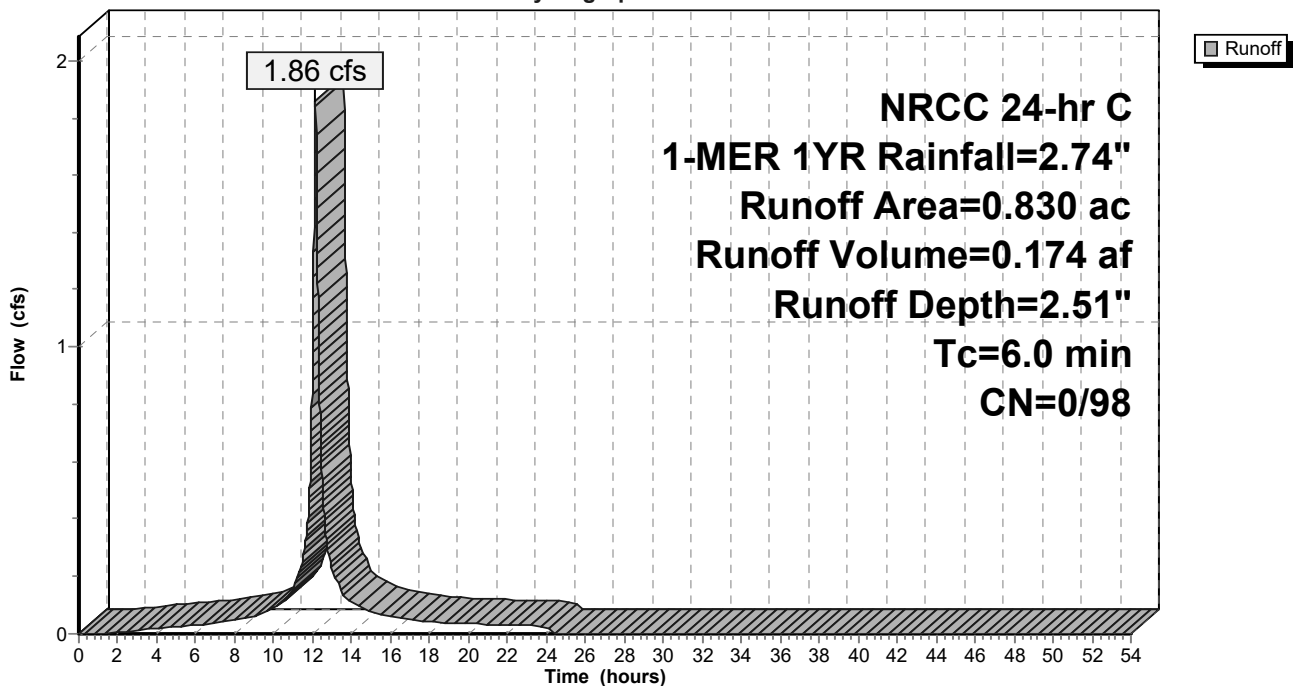
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 1-MER 1YR Rainfall=2.74"

Area (ac)	CN	Description
0.830	98	Roofs, HSG D
0.830	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PB-2: PB-2**

Hydrograph



**Summary for Subcatchment PB-3: PB-3**

Runoff = 0.22 cfs @ 12.14 hrs, Volume= 0.020 af, Depth= 1.40"

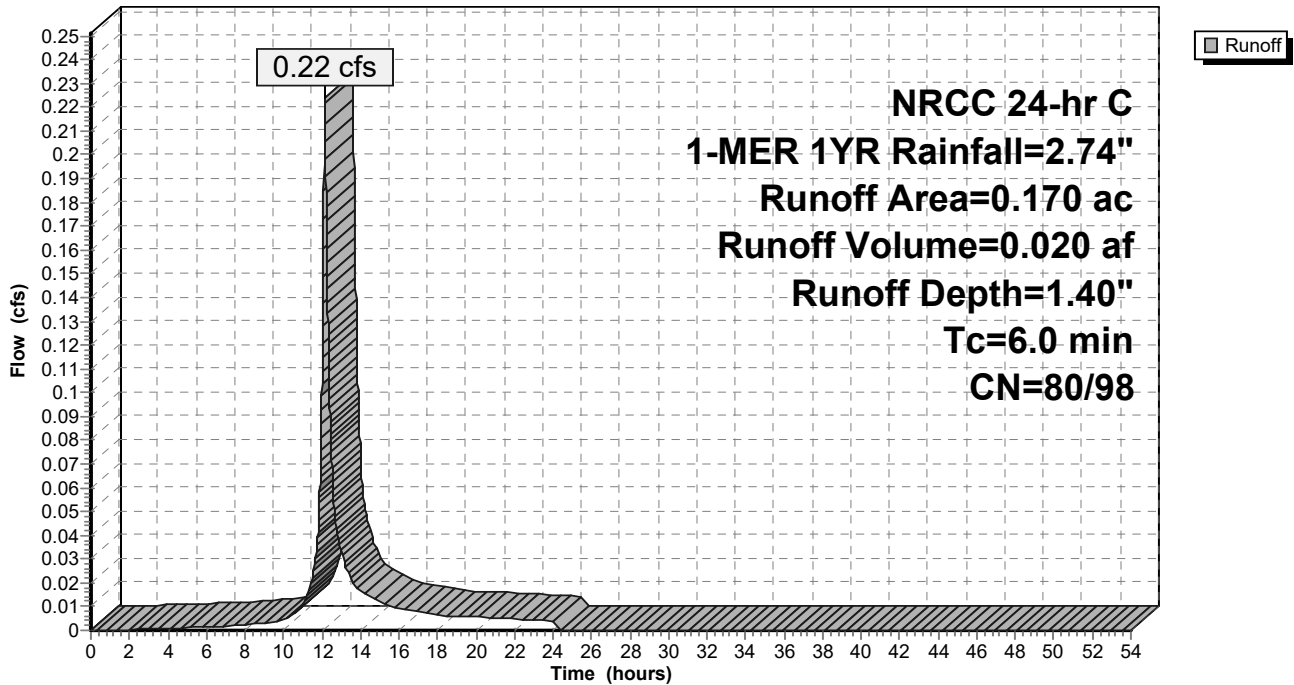
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 1-MER 1YR Rainfall=2.74"

Area (ac)	CN	Description
* 0.040	98	Sidewalks, HSG D
0.130	80	>75% Grass cover, Good, HSG D
0.170	84	Weighted Average
0.130	80	76.47% Pervious Area
0.040	98	23.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PB-3: PB-3**

Hydrograph





**Summary for Subcatchment PB-4: PB-4**

Runoff = 1.12 cfs @ 12.14 hrs, Volume= 0.105 af, Depth= 2.51"

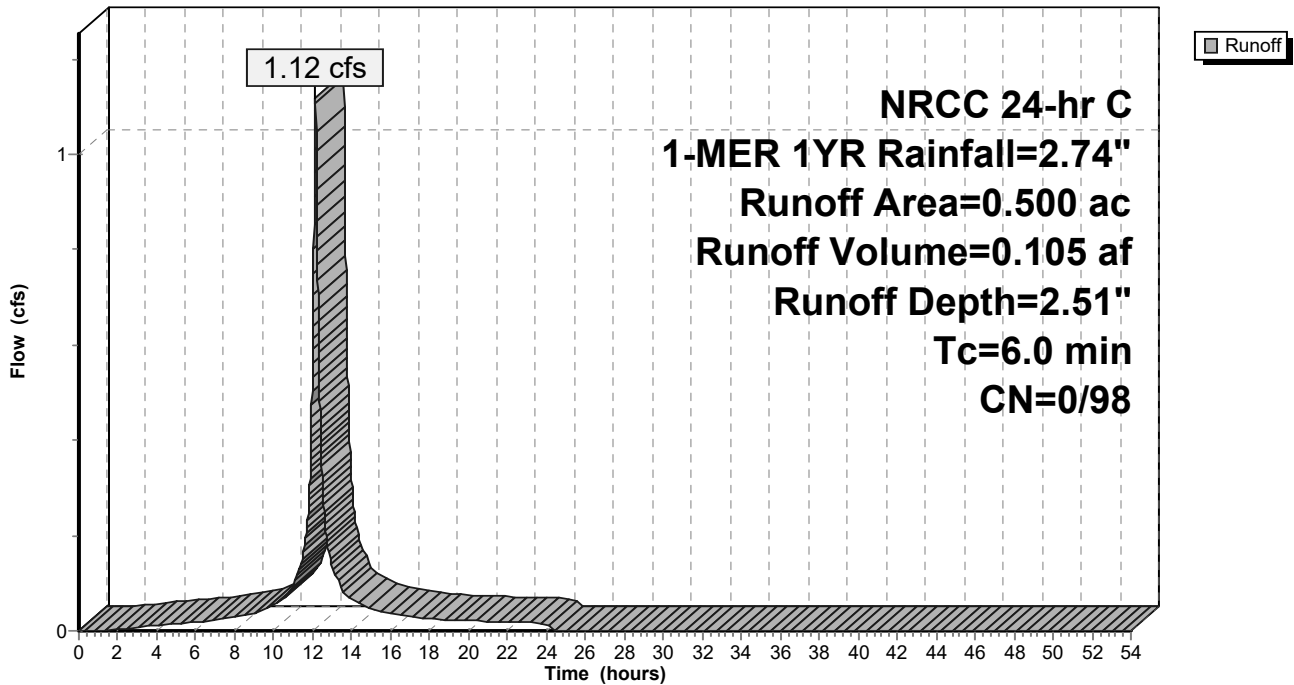
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 1-MER 1YR Rainfall=2.74"

Area (ac)	CN	Description
0.500	98	Paved parking, HSG D
0.500	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PB-4: PB-4**

Hydrograph



**Summary for Subcatchment PB-5: PB-5**

Runoff = 1.19 cfs @ 12.14 hrs, Volume= 0.111 af, Depth= 2.51"

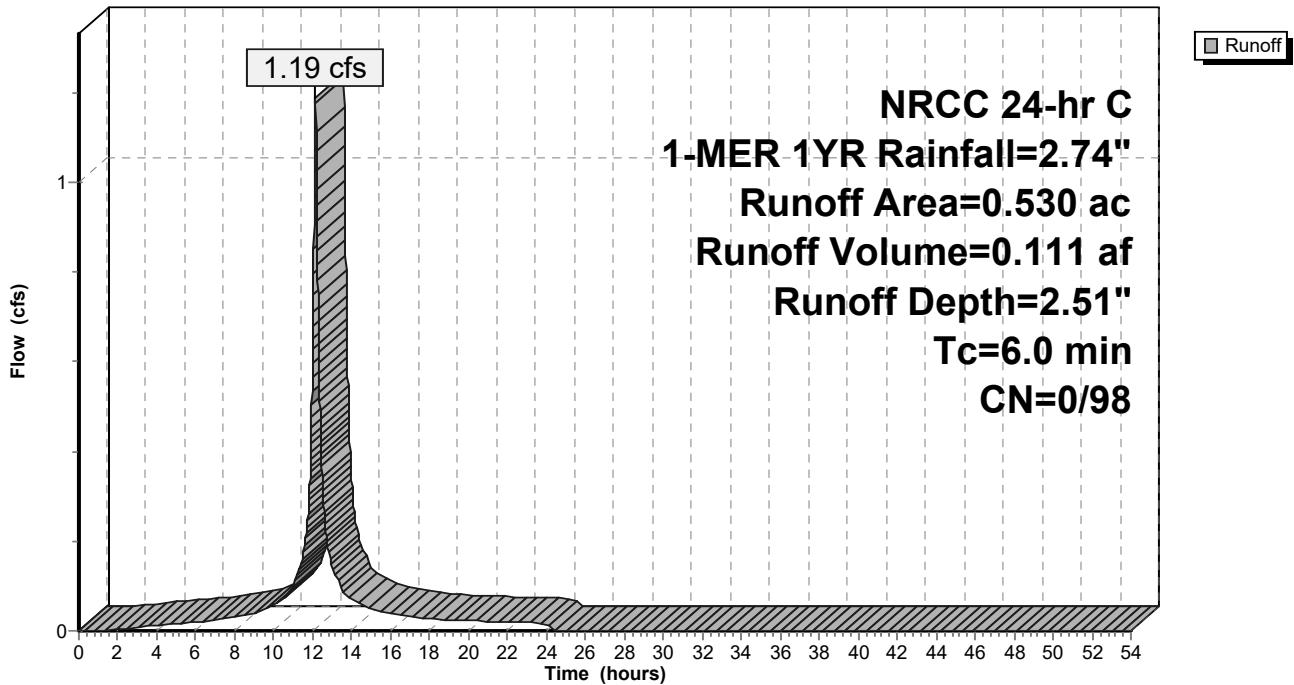
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 1-MER 1YR Rainfall=2.74"

Area (ac)	CN	Description
0.530	98	Roofs, HSG D
0.530	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PB-5: PB-5**

Hydrograph



**Summary for Subcatchment PB-6: PB-6**

Runoff = 0.50 cfs @ 12.14 hrs, Volume= 0.043 af, Depth= 1.36"

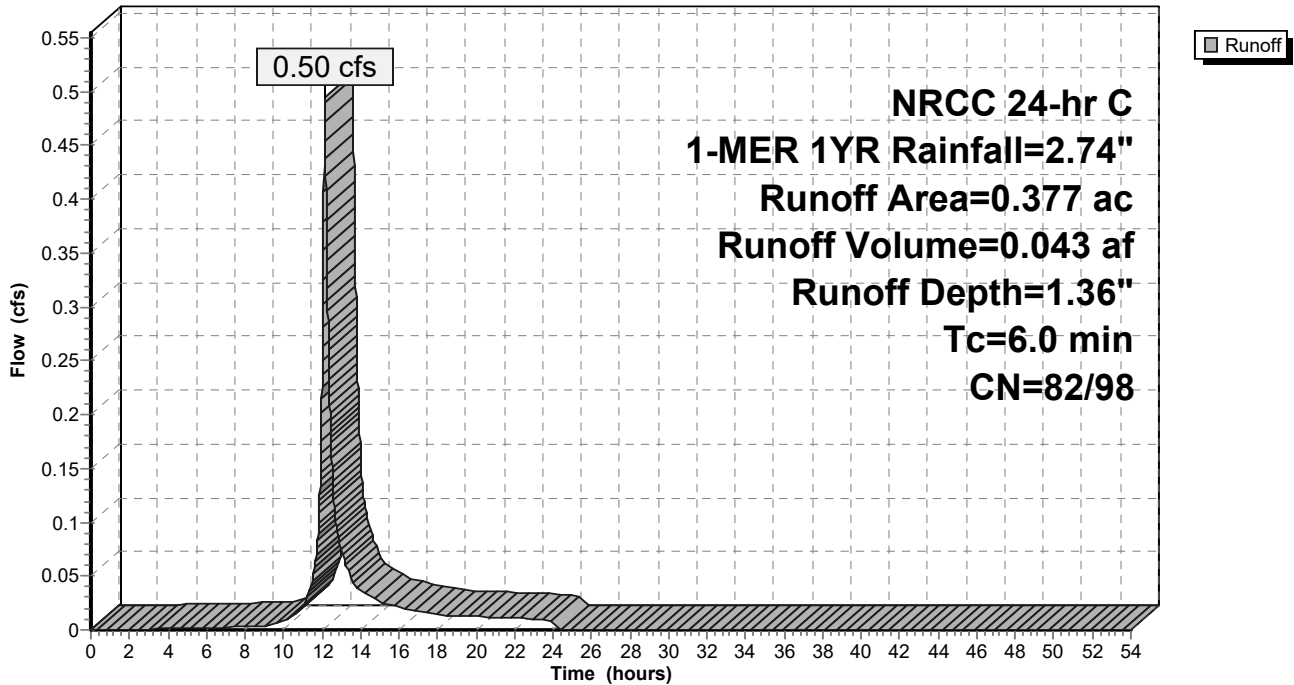
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 1-MER 1YR Rainfall=2.74"

Area (ac)	CN	Description
* 0.052	98	Sidewalks, HSG D
0.295	80	>75% Grass cover, Good, HSG D
0.030	98	Unconnected roofs, HSG D
0.377	84	Weighted Average
0.325	82	86.21% Pervious Area
0.052	98	13.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PB-6: PB-6**

Hydrograph



**Summary for Subcatchment PB-7: PB-7**

Runoff = 0.43 cfs @ 12.14 hrs, Volume= 0.040 af, Depth= 2.51"

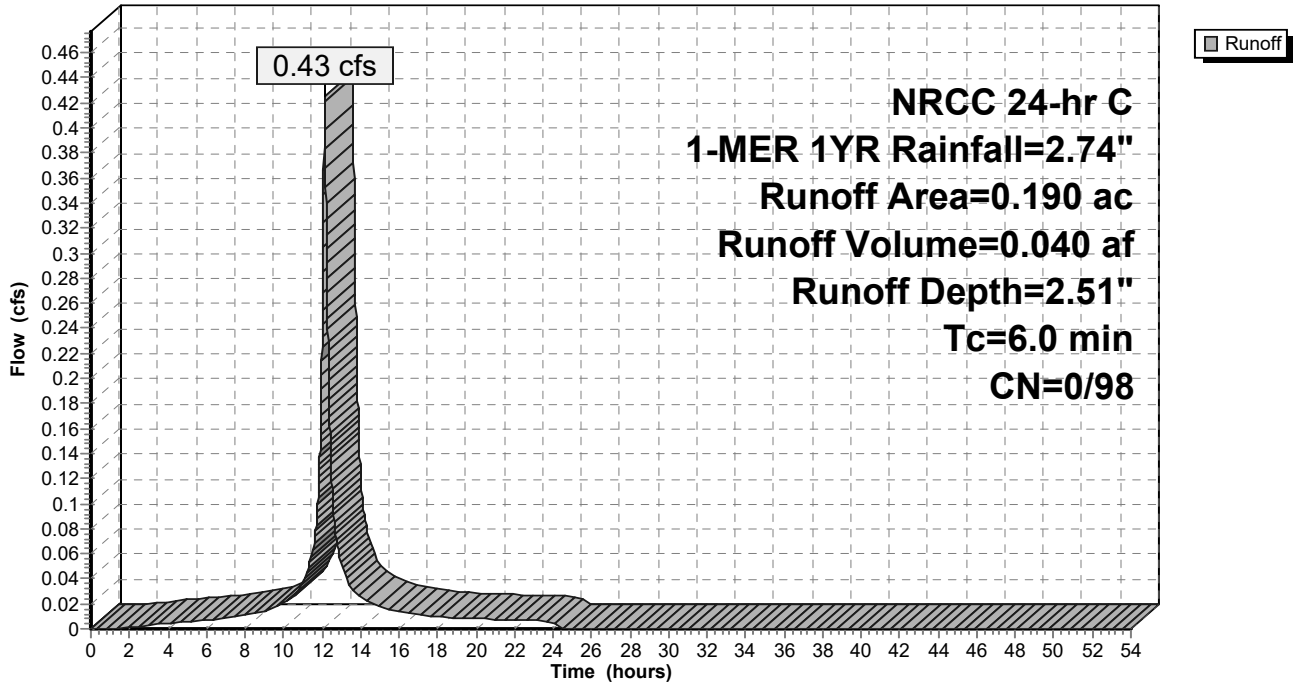
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 1-MER 1YR Rainfall=2.74"

Area (ac)	CN	Description
0.190	98	Roofs, HSG D
0.190	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PB-7: PB-7**

Hydrograph



**Summary for Subcatchment PB-8-ROW: PB-8-ROW**

Runoff = 0.34 cfs @ 12.14 hrs, Volume= 0.031 af, Depth= 2.51"

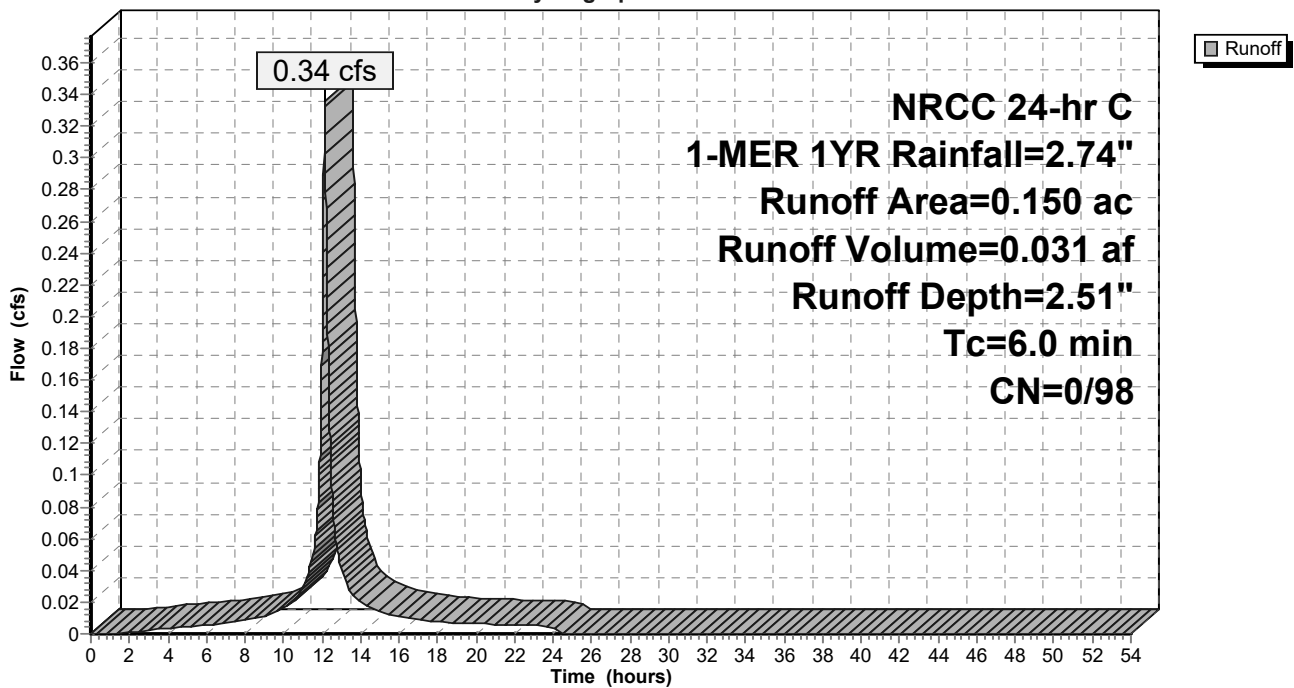
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 1-MER 1YR Rainfall=2.74"

Area (ac)	CN	Description
0.150	98	Paved parking, HSG D
0.150	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PB-8-ROW: PB-8-ROW**

Hydrograph



### Summary for Subcatchment PB-9: PB-9

Runoff = 1.61 cfs @ 12.14 hrs, Volume= 0.151 af, Depth= 2.51"

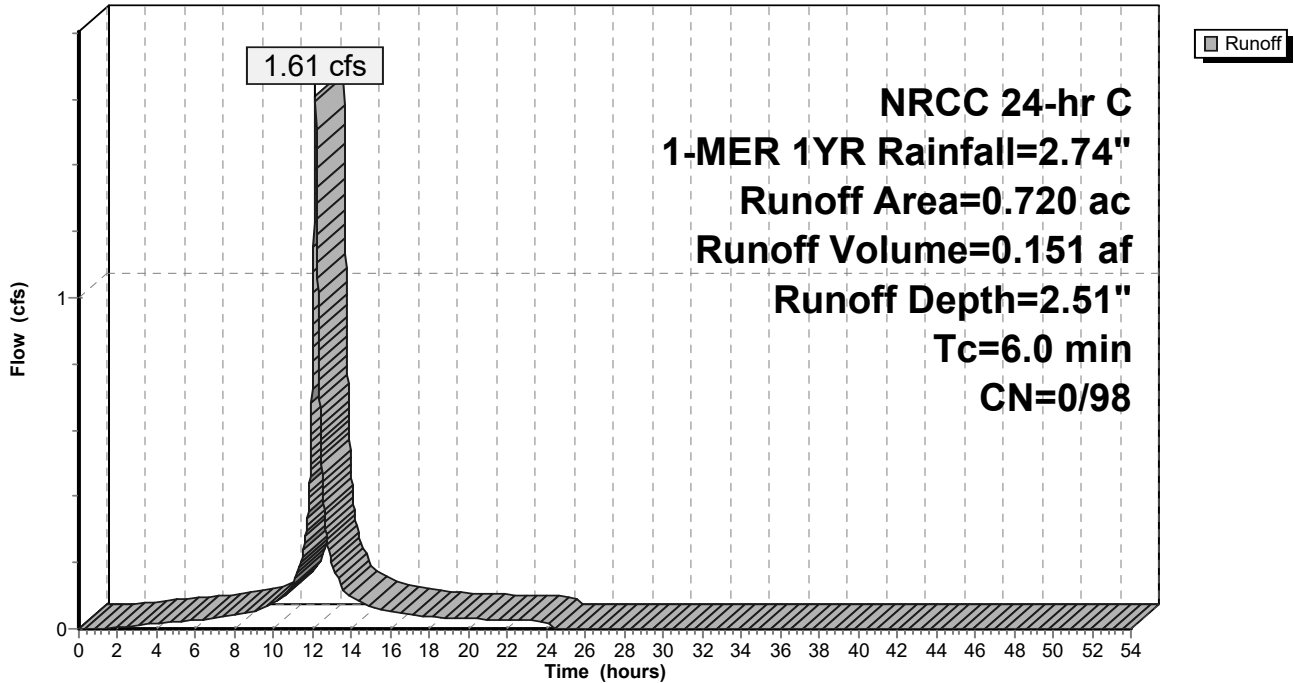
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 1-MER 1YR Rainfall=2.74"

Area (ac)	CN	Description
0.720	98	Paved parking, HSG A
0.720	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

### Subcatchment PB-9: PB-9

Hydrograph



### Summary for Reach 24" RCP: 24" RCP

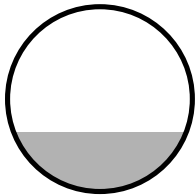
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 3.210 ac, 85.26% Impervious, Inflow Depth = 2.29" for 1-MER 1YR event  
 Inflow = 6.61 cfs @ 12.14 hrs, Volume= 0.613 af  
 Outflow = 6.61 cfs @ 12.14 hrs, Volume= 0.613 af, Atten= 0%, Lag= 0.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs  
 Max. Velocity= 7.56 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 2.62 fps, Avg. Travel Time= 0.2 min

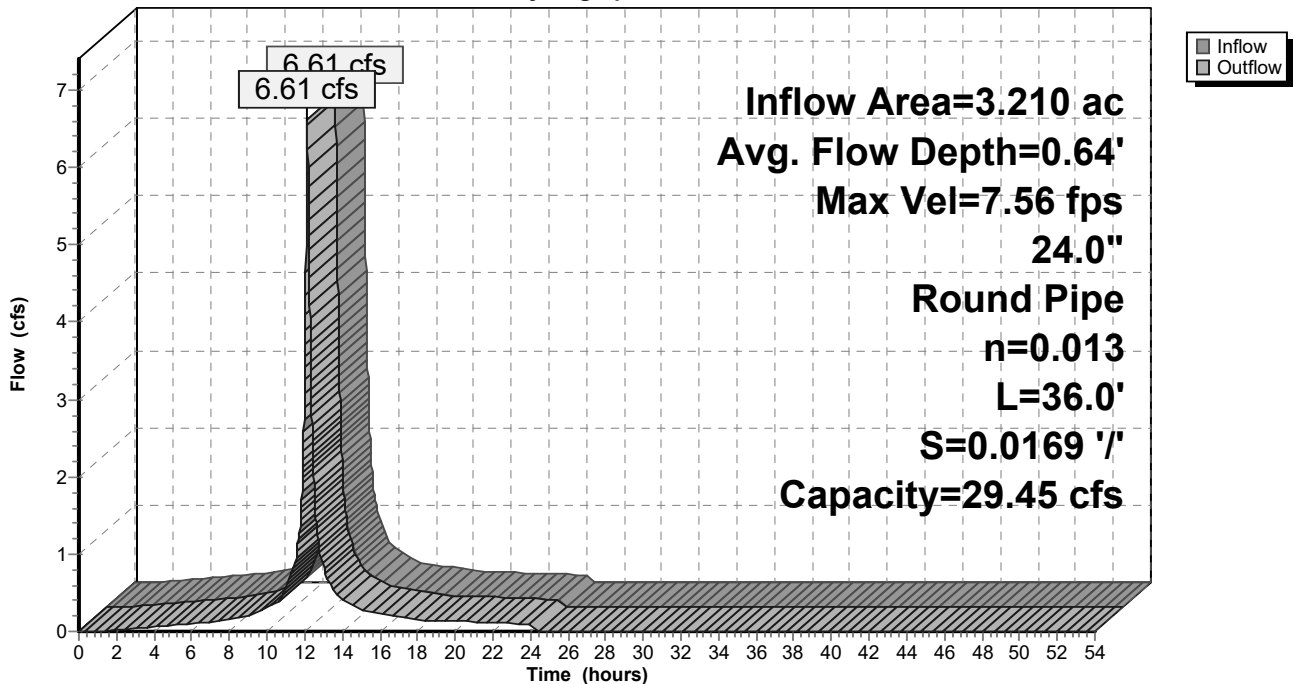
Peak Storage= 31 cf @ 12.14 hrs  
 Average Depth at Peak Storage= 0.64' , Surface Width= 1.87'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 29.45 cfs

24.0" Round Pipe  
 n= 0.013  
 Length= 36.0' Slope= 0.0169 '/'  
 Inlet Invert= 75.22', Outlet Invert= 74.61'



### Reach 24" RCP: 24" RCP

Hydrograph

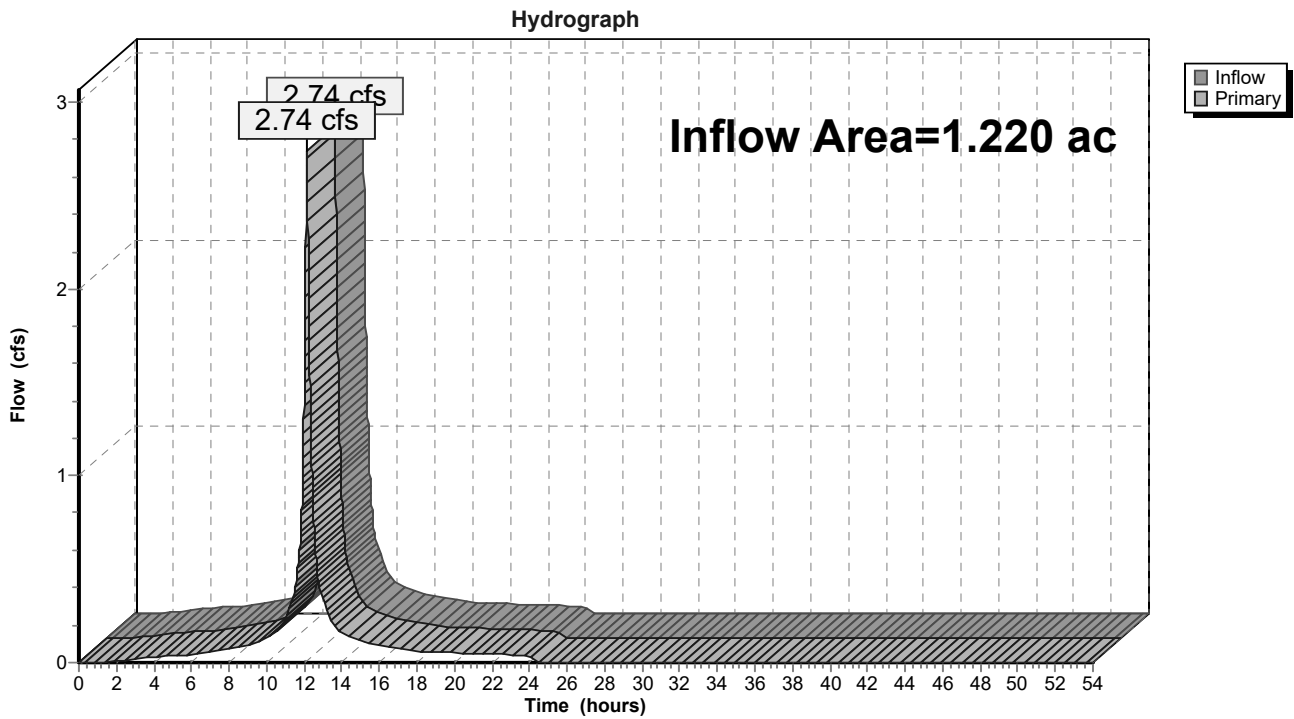


### Summary for Link MTD-B: MTD-B1

Inflow Area = 1.220 ac, 100.00% Impervious, Inflow Depth = 2.51" for 1-MER 1YR event  
Inflow = 2.74 cfs @ 12.14 hrs, Volume= 0.255 af  
Primary = 2.74 cfs @ 12.14 hrs, Volume= 0.255 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link MTD-B: MTD-B1



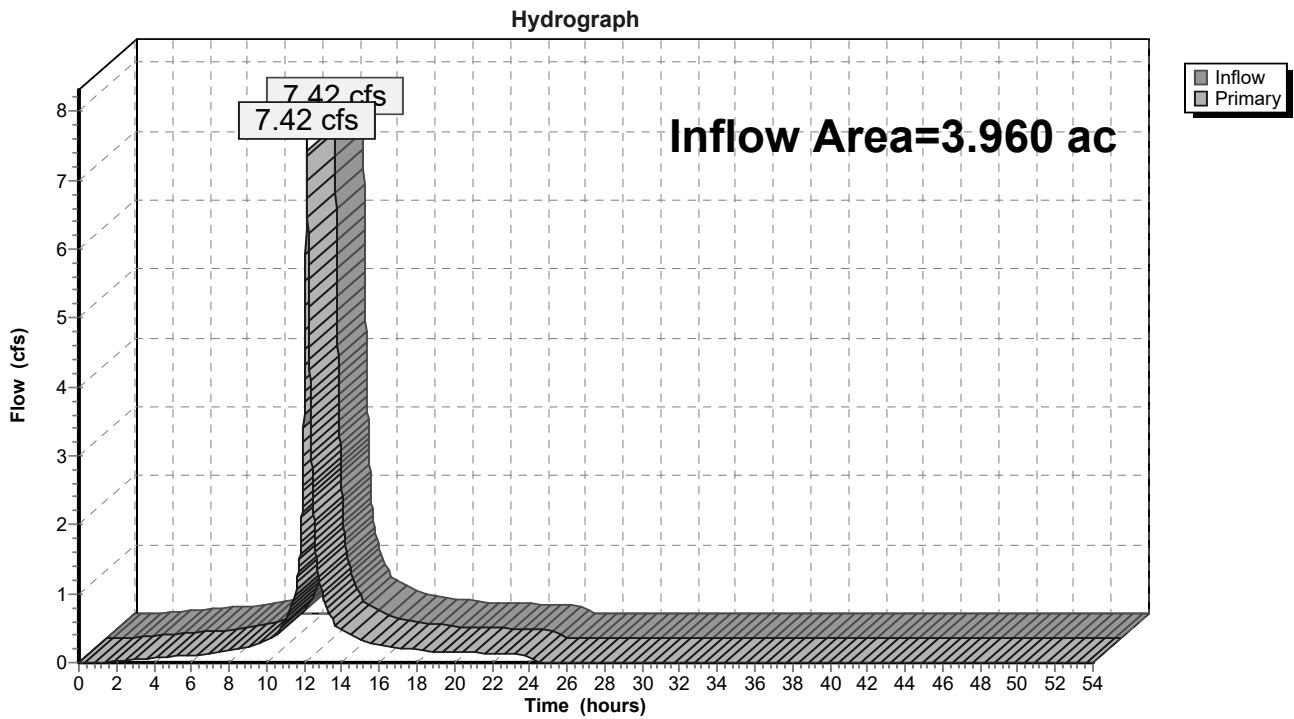


### Summary for Link POA-B1\*: POA-B1\* (ROCKY BROOK CULVERT)

Inflow Area = 3.960 ac, 73.91% Impervious, Inflow Depth = 2.09" for 1-MER 1YR event  
Inflow = 7.42 cfs @ 12.14 hrs, Volume= 0.688 af  
Primary = 7.42 cfs @ 12.14 hrs, Volume= 0.688 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-B1\*: POA-B1\* (ROCKY BROOK CULVERT)

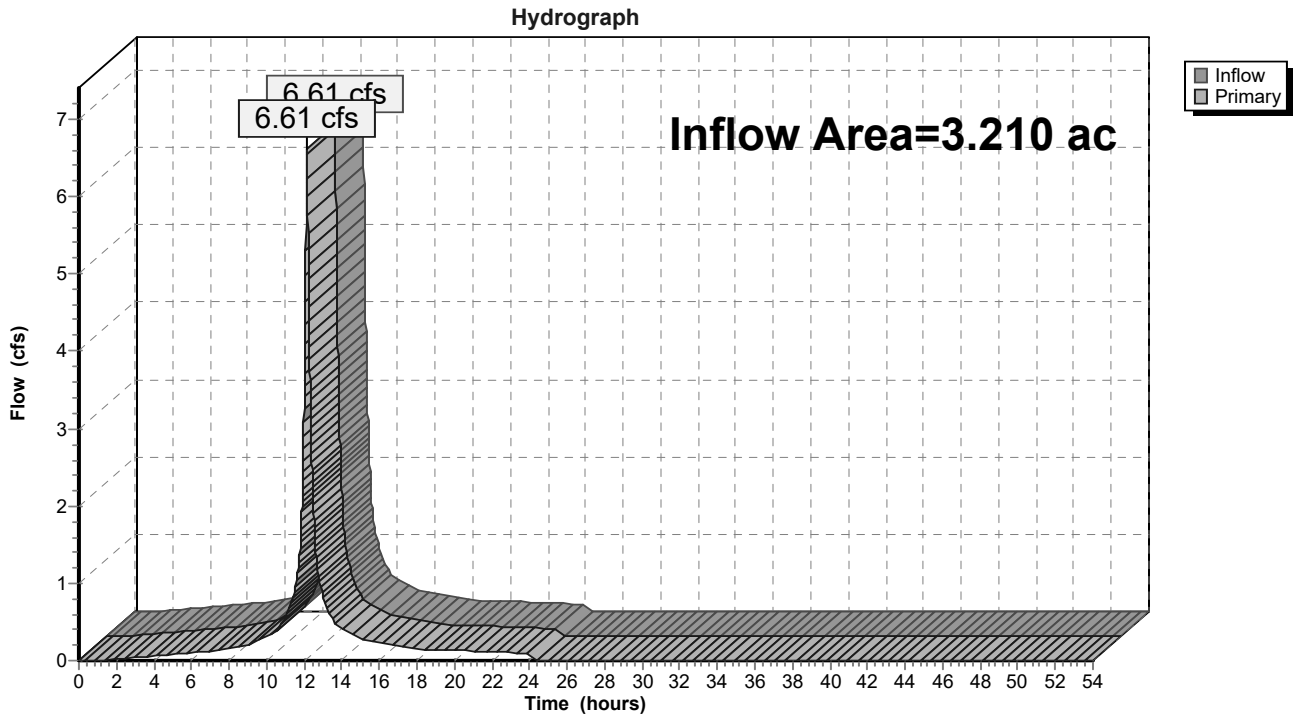


**Summary for Link POA-B1A\*: POA-B1A (ROCKY BROOK 24" HW)**

Inflow Area = 3.210 ac, 85.26% Impervious, Inflow Depth = 2.29" for 1-MER 1YR event  
Inflow = 6.61 cfs @ 12.14 hrs, Volume= 0.613 af  
Primary = 6.61 cfs @ 12.14 hrs, Volume= 0.613 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

**Link POA-B1A\*: POA-B1A (ROCKY BROOK 24" HW)**



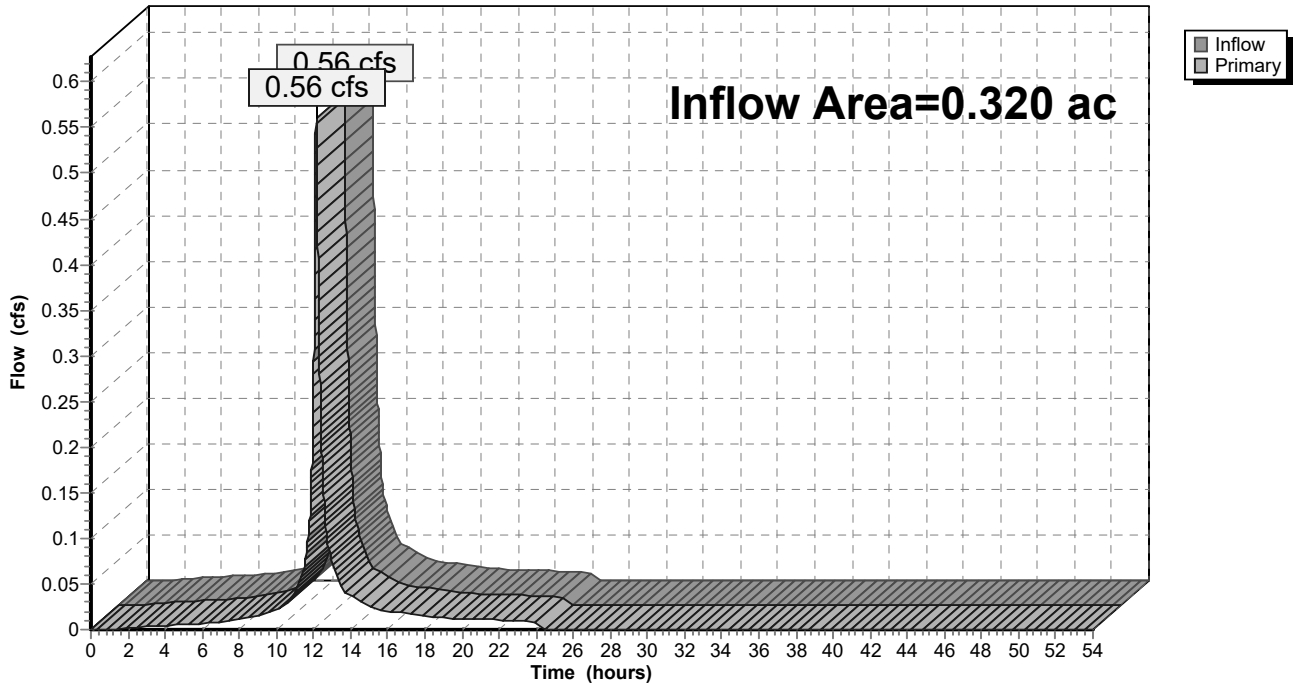
### Summary for Link POA-B2\*: POA-B2 (BANK ST)

Inflow Area = 0.320 ac, 59.37% Impervious, Inflow Depth = 1.92" for 1-MER 1YR event  
Inflow = 0.56 cfs @ 12.14 hrs, Volume= 0.051 af  
Primary = 0.56 cfs @ 12.14 hrs, Volume= 0.051 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-B2\*: POA-B2 (BANK ST)

Hydrograph



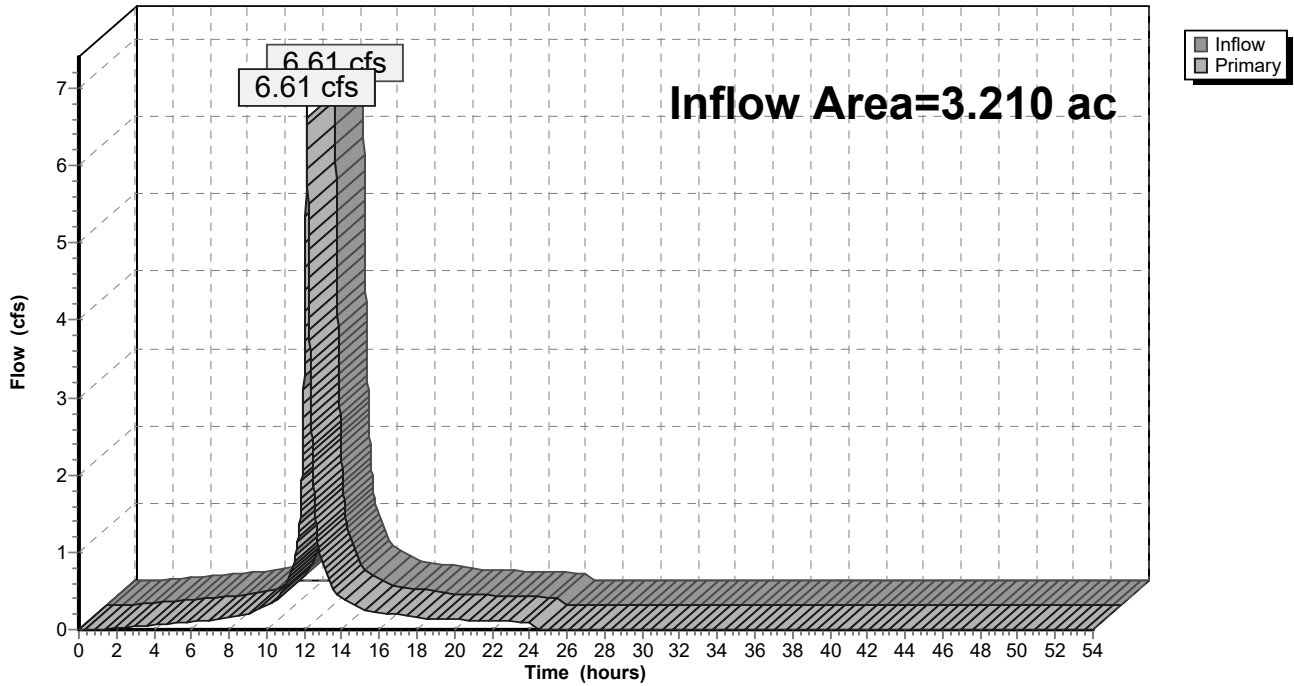
### Summary for Link POA-E4\*: POA-E4\* (24" RCP)

Inflow Area = 3.210 ac, 85.26% Impervious, Inflow Depth = 2.29" for 1-MER 1YR event  
Inflow = 6.61 cfs @ 12.14 hrs, Volume= 0.613 af  
Primary = 6.61 cfs @ 12.14 hrs, Volume= 0.613 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-E4\*: POA-E4\* (24" RCP)

Hydrograph



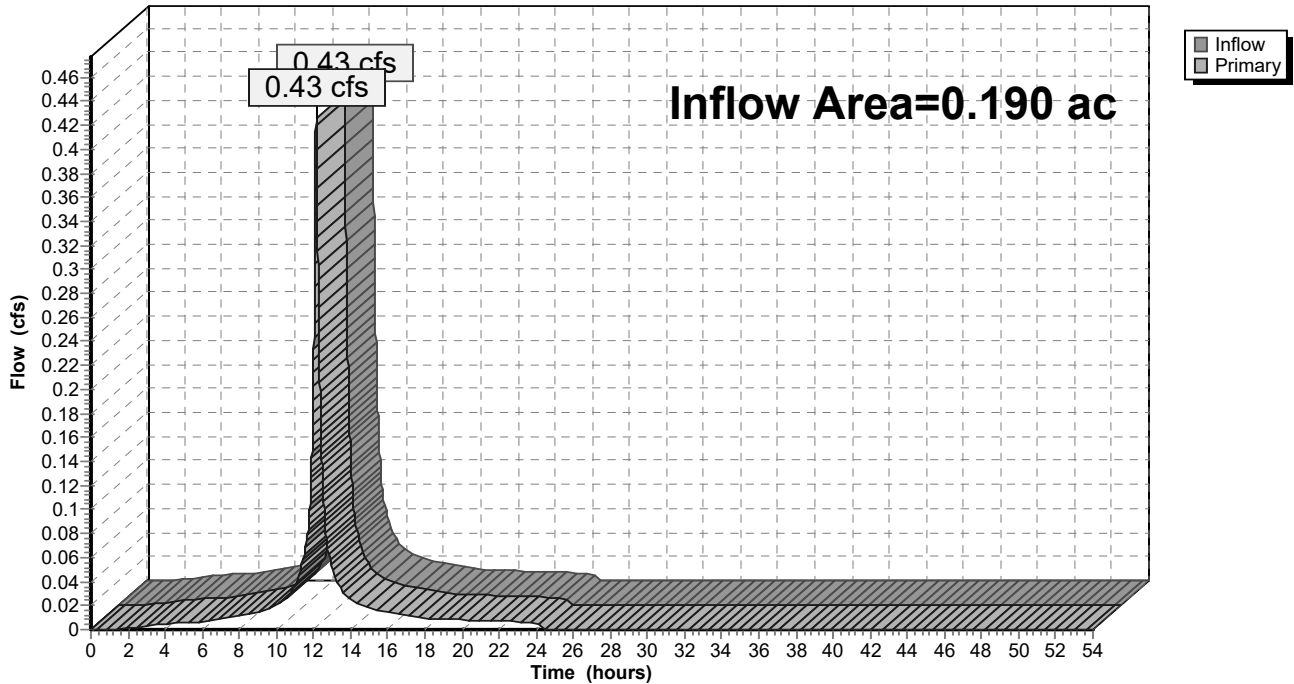
### Summary for Link POA-E5\*: POA-E5 (10" TER\*)

Inflow Area = 0.190 ac, 100.00% Impervious, Inflow Depth = 2.51" for 1-MER 1YR event  
Inflow = 0.43 cfs @ 12.14 hrs, Volume= 0.040 af  
Primary = 0.43 cfs @ 12.14 hrs, Volume= 0.040 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-E5\*: POA-E5 (10" TER\*)

Hydrograph



Time span=0.00-54.00 hrs, dt=0.01 hrs, 5401 points  
 Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious  
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

<b>Subcatchment PB-1: PB-1</b>	Runoff Area=0.253 ac 41.50% Impervious Runoff Depth=1.93" Tc=6.0 min CN=74/98 Runoff=0.44 cfs 0.041 af
<b>Subcatchment PB-10: PB-10</b>	Runoff Area=0.560 ac 0.00% Impervious Runoff Depth=1.11" Tc=6.0 min CN=74/0 Runoff=0.60 cfs 0.052 af
<b>Subcatchment PB-2: PB-2</b>	Runoff Area=0.830 ac 100.00% Impervious Runoff Depth=3.08" Tc=6.0 min CN=0/98 Runoff=2.26 cfs 0.213 af
<b>Subcatchment PB-3: PB-3</b>	Runoff Area=0.170 ac 23.53% Impervious Runoff Depth=1.86" Tc=6.0 min CN=80/98 Runoff=0.30 cfs 0.026 af
<b>Subcatchment PB-4: PB-4</b>	Runoff Area=0.500 ac 100.00% Impervious Runoff Depth=3.08" Tc=6.0 min CN=0/98 Runoff=1.36 cfs 0.128 af
<b>Subcatchment PB-5: PB-5</b>	Runoff Area=0.530 ac 100.00% Impervious Runoff Depth=3.08" Tc=6.0 min CN=0/98 Runoff=1.44 cfs 0.136 af
<b>Subcatchment PB-6: PB-6</b>	Runoff Area=0.377 ac 13.79% Impervious Runoff Depth=1.83" Tc=6.0 min CN=82/98 Runoff=0.67 cfs 0.057 af
<b>Subcatchment PB-7: PB-7</b>	Runoff Area=0.190 ac 100.00% Impervious Runoff Depth=3.08" Tc=6.0 min CN=0/98 Runoff=0.52 cfs 0.049 af
<b>Subcatchment PB-8-ROW: PB-8-ROW</b>	Runoff Area=0.150 ac 100.00% Impervious Runoff Depth=3.08" Tc=6.0 min CN=0/98 Runoff=0.41 cfs 0.038 af
<b>Subcatchment PB-9: PB-9</b>	Runoff Area=0.720 ac 100.00% Impervious Runoff Depth=3.08" Tc=6.0 min CN=0/98 Runoff=1.96 cfs 0.185 af
<b>Reach 24" RCP: 24" RCP</b>	Avg. Flow Depth=0.72' Max Vel=8.01 fps Inflow=8.14 cfs 0.760 af 24.0" Round Pipe n=0.013 L=36.0' S=0.0169' Capacity=29.45 cfs Outflow=8.14 cfs 0.760 af
<b>Link MTD-B: MTD-B1</b>	Inflow=3.32 cfs 0.313 af Primary=3.32 cfs 0.313 af
<b>Link POA-B1*: POA-B1* (ROCKY BROOK CULVERT)</b>	Inflow=9.25 cfs 0.860 af Primary=9.25 cfs 0.860 af
<b>Link POA-B1A*: POA-B1A (ROCKY BROOK 24" HW)</b>	Inflow=8.14 cfs 0.760 af Primary=8.14 cfs 0.760 af
<b>Link POA-B2*: POA-B2 (BANK ST)</b>	Inflow=0.71 cfs 0.065 af Primary=0.71 cfs 0.065 af
<b>Link POA-E4*: POA-E4* (24" RCP)</b>	Inflow=8.14 cfs 0.760 af Primary=8.14 cfs 0.760 af

**200811\_Model**

NRCC 24-hr C 2-MER 2YR Rainfall=3.31"

Prepared by Maser Consulting

Printed 8/12/2020

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**Link POA-E5\*: POA-E5 (10" TER\*)**

Inflow=0.52 cfs 0.049 af  
Primary=0.52 cfs 0.049 af

**Total Runoff Area = 4.280 ac   Runoff Volume = 0.925 af   Average Runoff Depth = 2.59"**  
**27.17% Pervious = 1.163 ac   72.83% Impervious = 3.117 ac**

**Summary for Subcatchment PB-1: PB-1**

Runoff = 0.44 cfs @ 12.14 hrs, Volume= 0.041 af, Depth= 1.93"

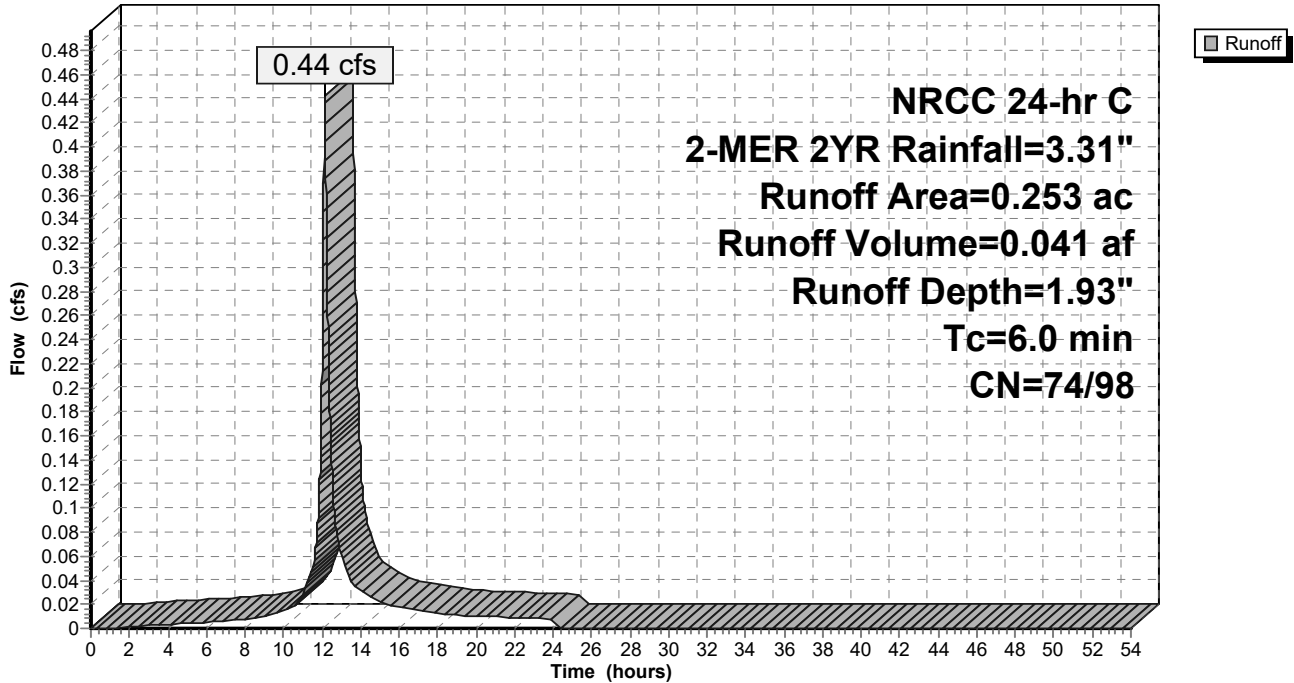
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 2-MER 2YR Rainfall=3.31"

Area (ac)	CN	Description
* 0.105	98	Pool/Patio
0.148	74	>75% Grass cover, Good, HSG C
0.253	84	Weighted Average
0.148	74	58.50% Pervious Area
0.105	98	41.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PB-1: PB-1**

Hydrograph





**Summary for Subcatchment PB-10: PB-10**

Runoff = 0.60 cfs @ 12.15 hrs, Volume= 0.052 af, Depth= 1.11"

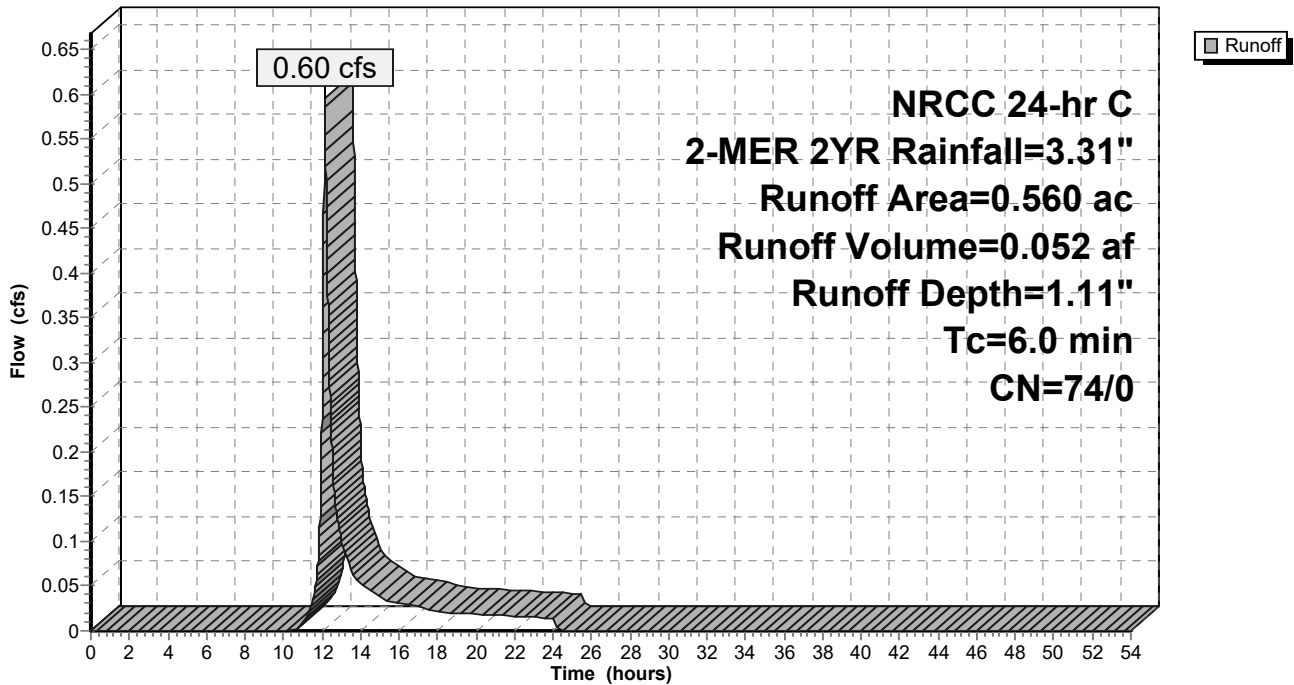
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 2-MER 2YR Rainfall=3.31"

Area (ac)	CN	Description
0.560	74	>75% Grass cover, Good, HSG C
0.560	74	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PB-10: PB-10**

Hydrograph



**Summary for Subcatchment PB-2: PB-2**

Runoff = 2.26 cfs @ 12.14 hrs, Volume= 0.213 af, Depth= 3.08"

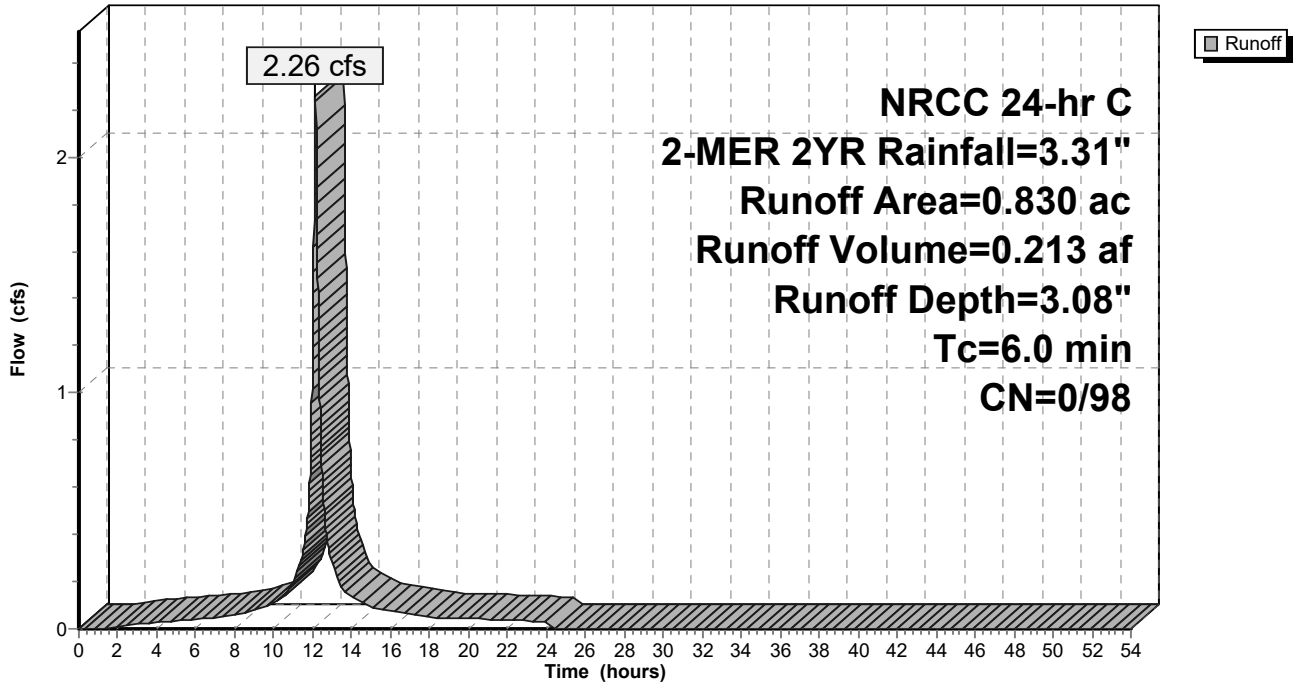
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 2-MER 2YR Rainfall=3.31"

Area (ac)	CN	Description
0.830	98	Roofs, HSG D
0.830	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PB-2: PB-2**

Hydrograph



### Summary for Subcatchment PB-3: PB-3

Runoff = 0.30 cfs @ 12.14 hrs, Volume= 0.026 af, Depth= 1.86"

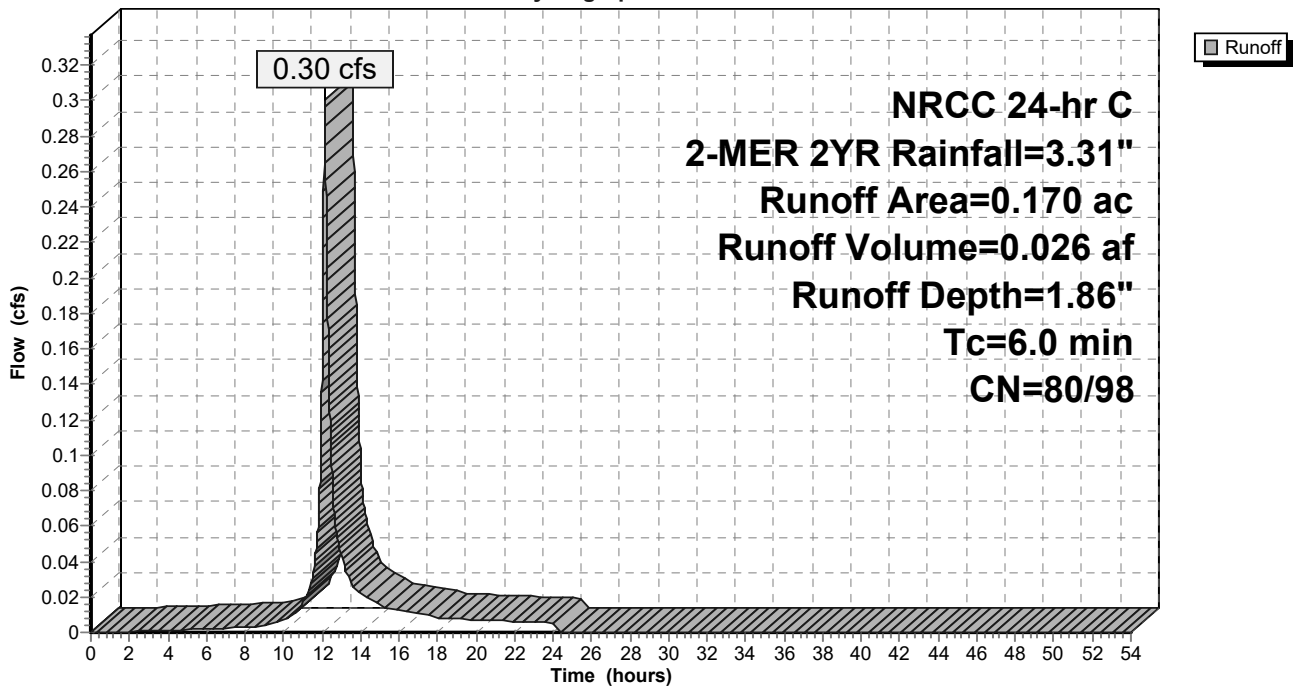
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 2-MER 2YR Rainfall=3.31"

Area (ac)	CN	Description
* 0.040	98	Sidewalks, HSG D
0.130	80	>75% Grass cover, Good, HSG D
0.170	84	Weighted Average
0.130	80	76.47% Pervious Area
0.040	98	23.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

### Subcatchment PB-3: PB-3

Hydrograph



### Summary for Subcatchment PB-4: PB-4

Runoff = 1.36 cfs @ 12.14 hrs, Volume= 0.128 af, Depth= 3.08"

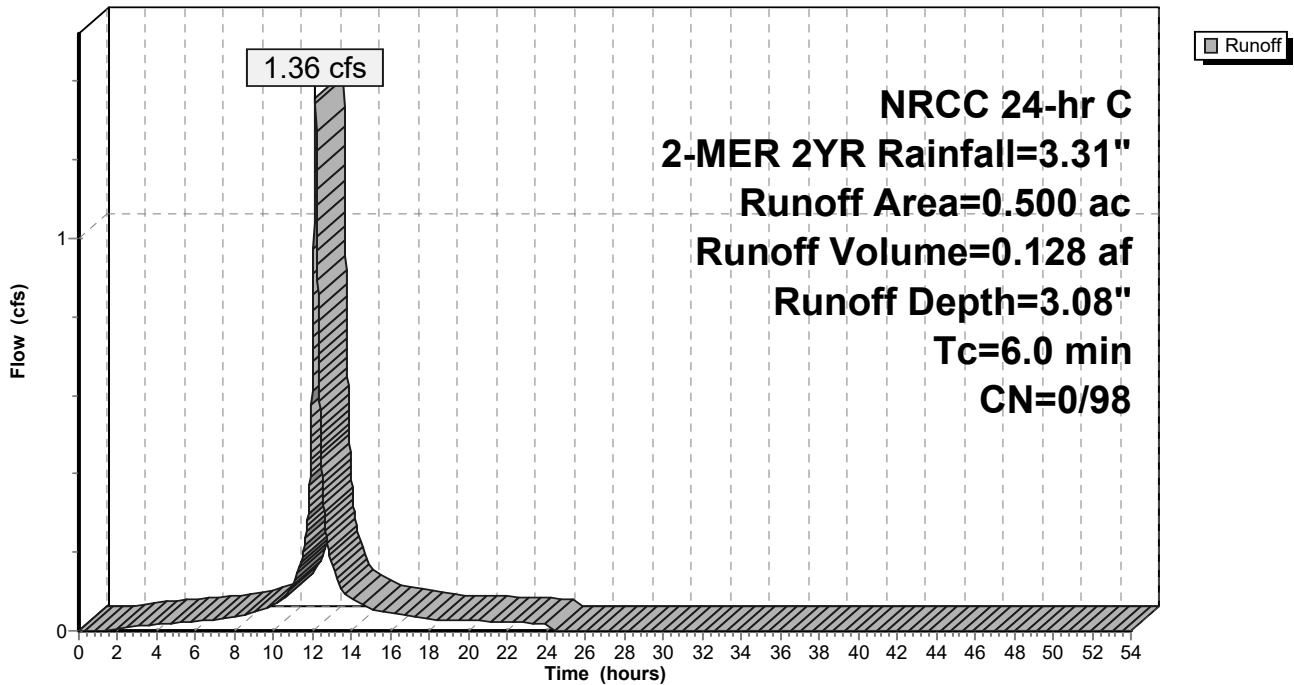
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 2-MER 2YR Rainfall=3.31"

Area (ac)	CN	Description
0.500	98	Paved parking, HSG D
0.500	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

### Subcatchment PB-4: PB-4

Hydrograph



**Summary for Subcatchment PB-5: PB-5**

Runoff = 1.44 cfs @ 12.14 hrs, Volume= 0.136 af, Depth= 3.08"

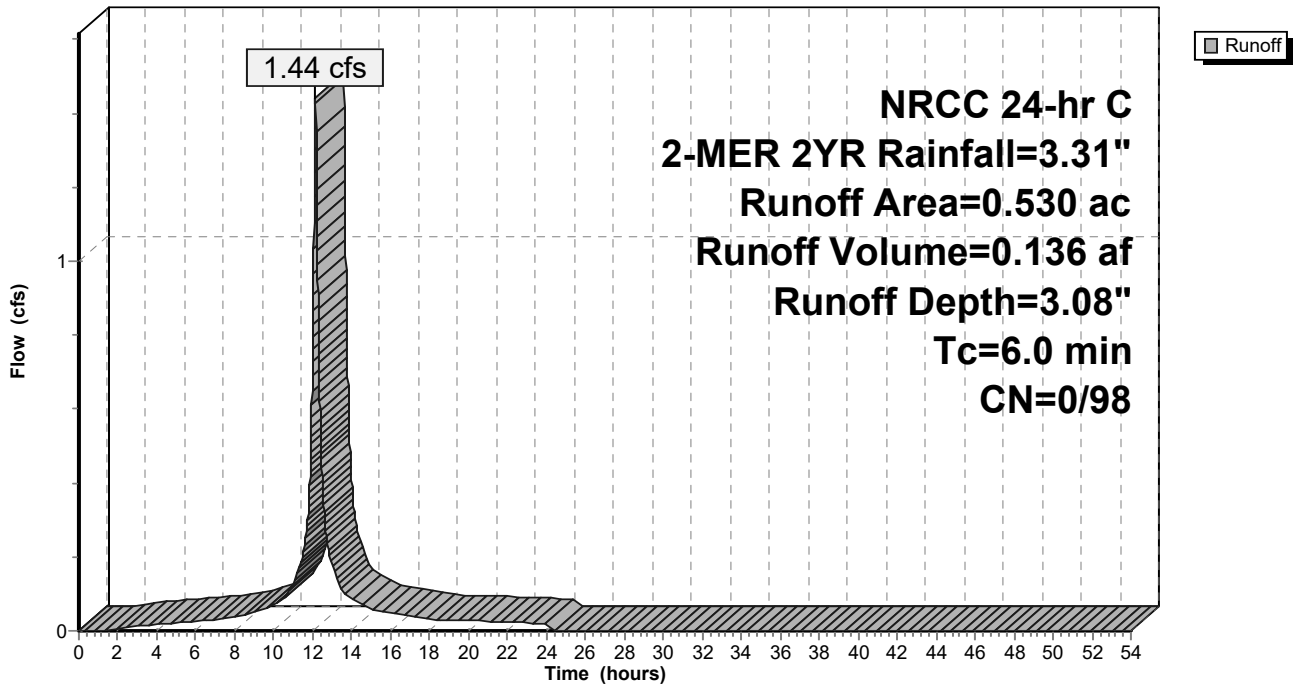
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 2-MER 2YR Rainfall=3.31"

Area (ac)	CN	Description
0.530	98	Roofs, HSG D
0.530	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PB-5: PB-5**

Hydrograph



**Summary for Subcatchment PB-6: PB-6**

Runoff = 0.67 cfs @ 12.14 hrs, Volume= 0.057 af, Depth= 1.83"

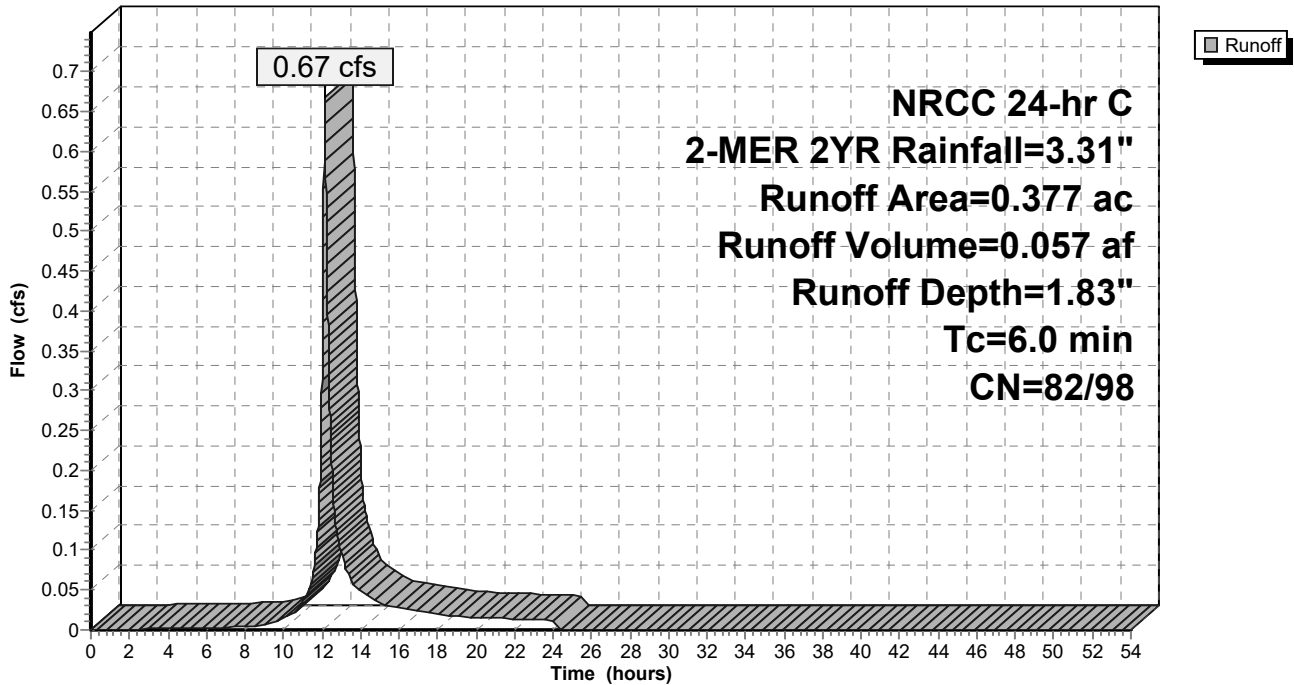
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 2-MER 2YR Rainfall=3.31"

Area (ac)	CN	Description
* 0.052	98	Sidewalks, HSG D
0.295	80	>75% Grass cover, Good, HSG D
0.030	98	Unconnected roofs, HSG D
0.377	84	Weighted Average
0.325	82	86.21% Pervious Area
0.052	98	13.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PB-6: PB-6**

Hydrograph



**Summary for Subcatchment PB-7: PB-7**

Runoff = 0.52 cfs @ 12.14 hrs, Volume= 0.049 af, Depth= 3.08"

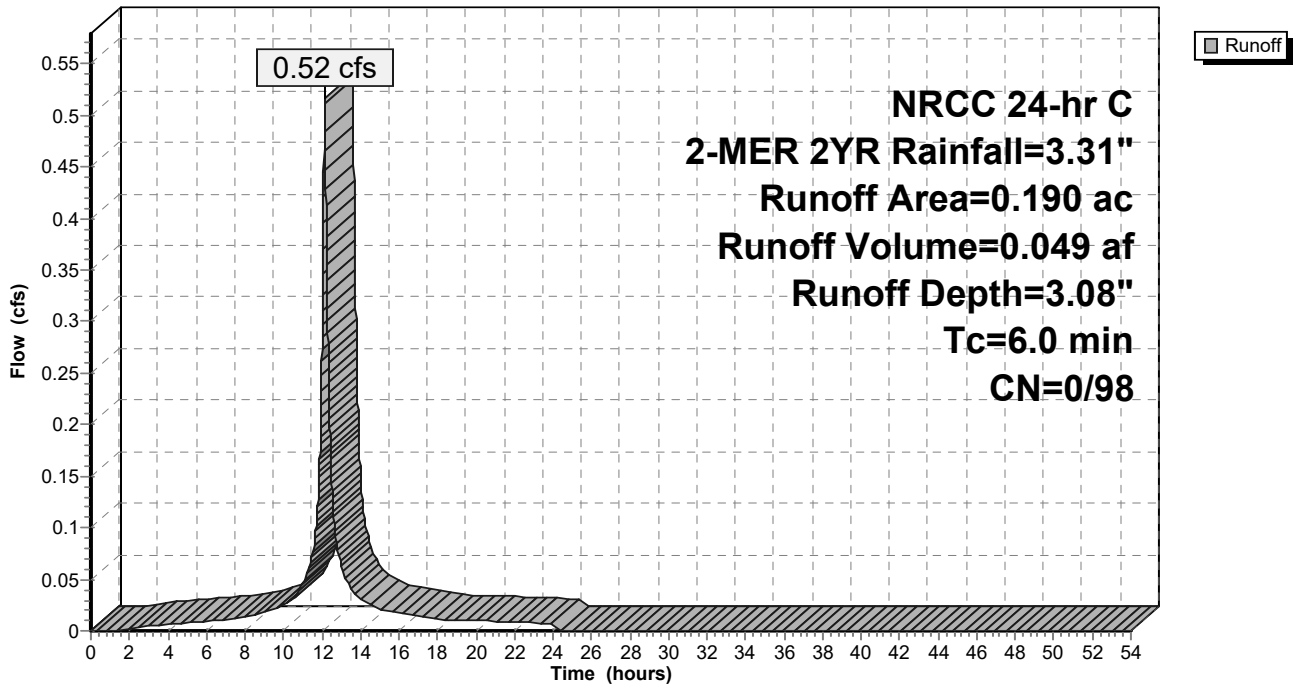
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 2-MER 2YR Rainfall=3.31"

Area (ac)	CN	Description
0.190	98	Roofs, HSG D
0.190	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PB-7: PB-7**

Hydrograph



**Summary for Subcatchment PB-8-ROW: PB-8-ROW**

Runoff = 0.41 cfs @ 12.14 hrs, Volume= 0.038 af, Depth= 3.08"

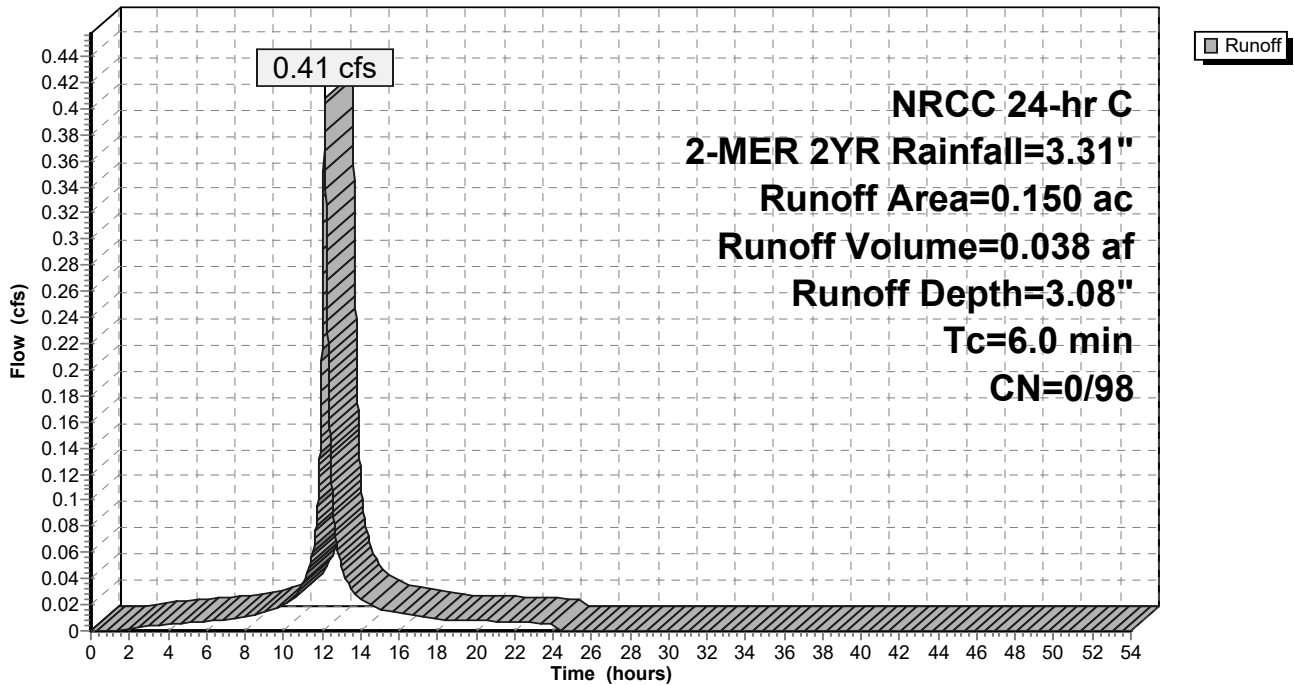
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 2-MER 2YR Rainfall=3.31"

Area (ac)	CN	Description
0.150	98	Paved parking, HSG D
0.150	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PB-8-ROW: PB-8-ROW**

Hydrograph





**Summary for Subcatchment PB-9: PB-9**

Runoff = 1.96 cfs @ 12.14 hrs, Volume= 0.185 af, Depth= 3.08"

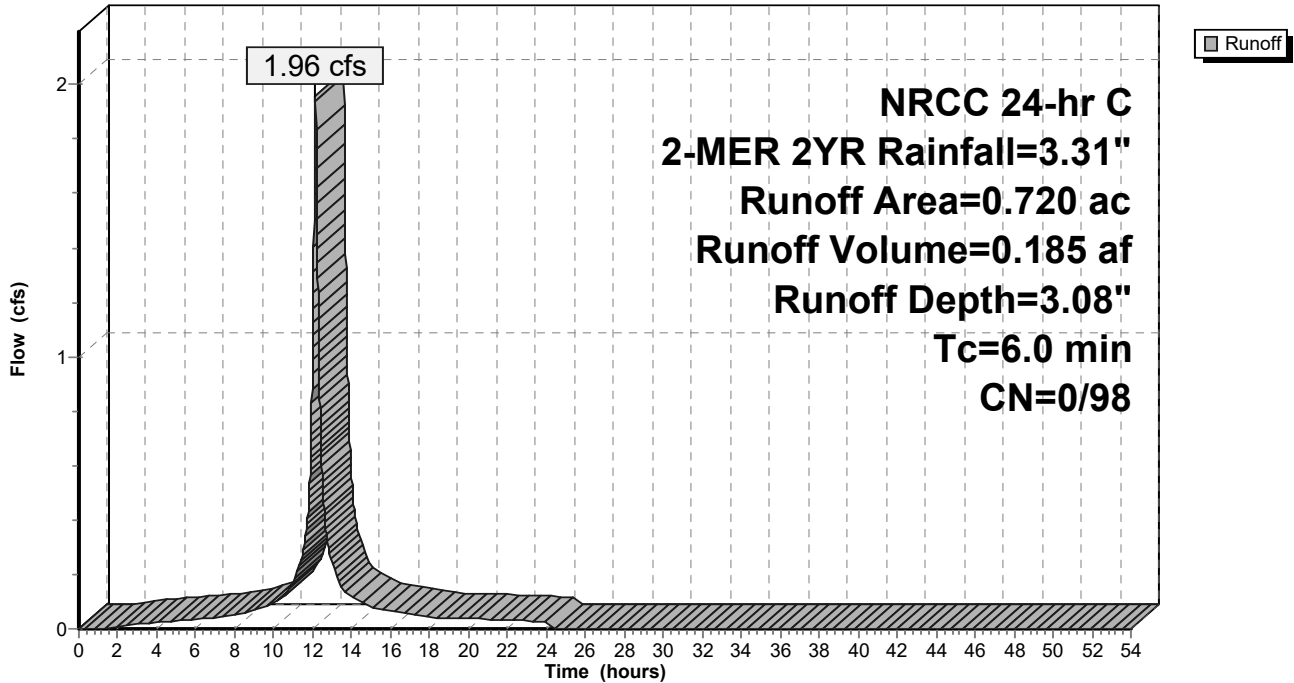
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 2-MER 2YR Rainfall=3.31"

Area (ac)	CN	Description
0.720	98	Paved parking, HSG A
0.720	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PB-9: PB-9**

Hydrograph



### Summary for Reach 24" RCP: 24" RCP

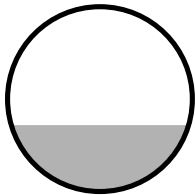
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 3.210 ac, 85.26% Impervious, Inflow Depth = 2.84" for 2-MER 2YR event  
 Inflow = 8.14 cfs @ 12.14 hrs, Volume= 0.760 af  
 Outflow = 8.14 cfs @ 12.14 hrs, Volume= 0.760 af, Atten= 0%, Lag= 0.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs  
 Max. Velocity= 8.01 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 2.79 fps, Avg. Travel Time= 0.2 min

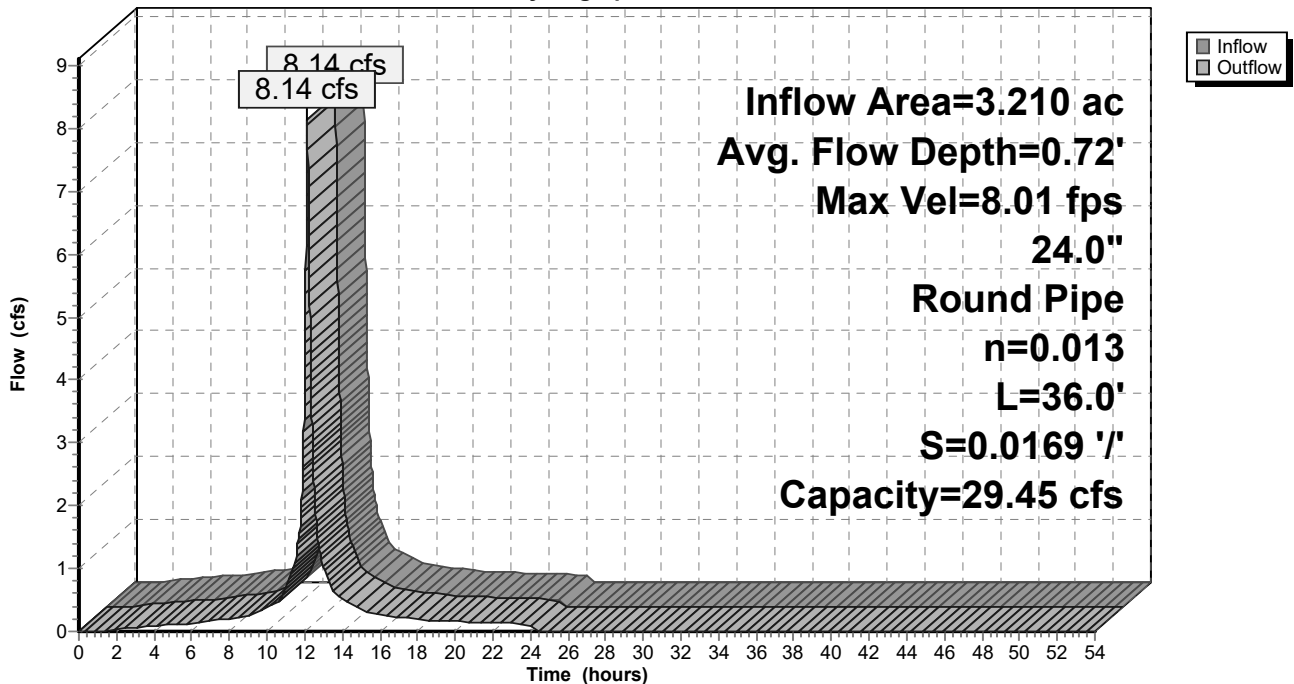
Peak Storage= 37 cf @ 12.14 hrs  
 Average Depth at Peak Storage= 0.72', Surface Width= 1.92'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 29.45 cfs

24.0" Round Pipe  
 n= 0.013  
 Length= 36.0' Slope= 0.0169 '/'  
 Inlet Invert= 75.22', Outlet Invert= 74.61'



### Reach 24" RCP: 24" RCP

Hydrograph

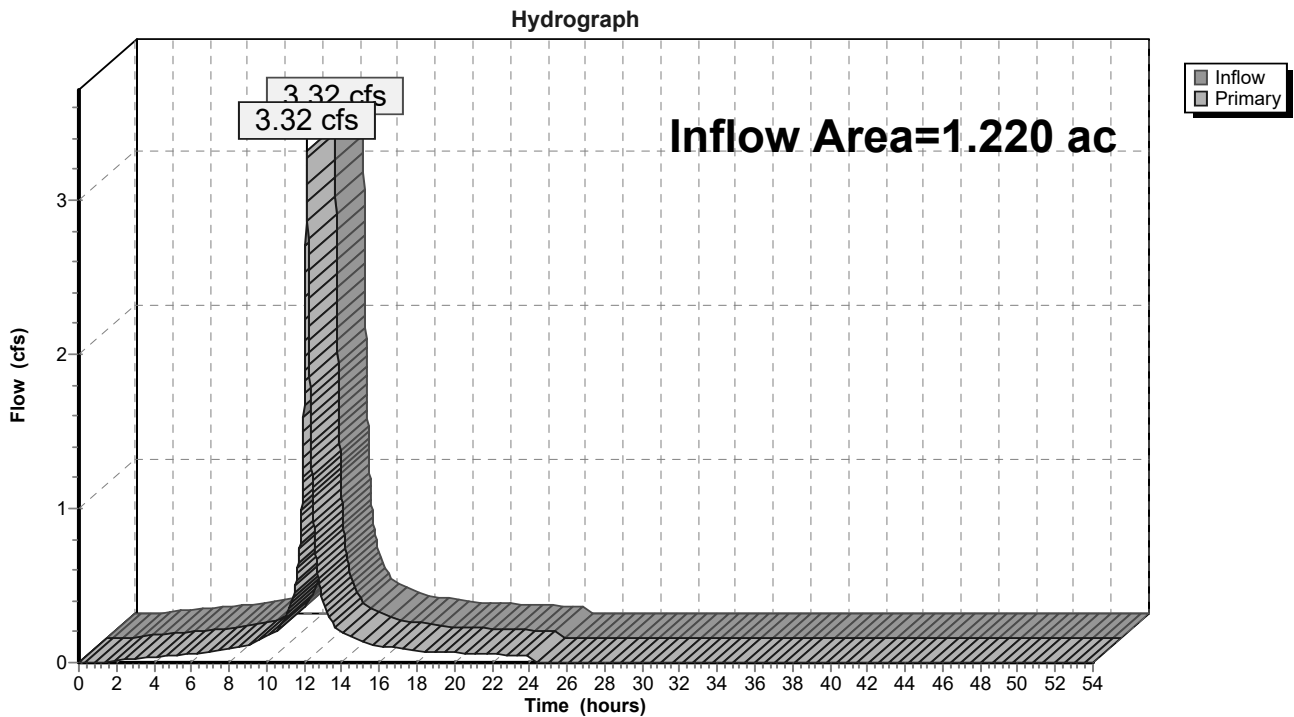


### Summary for Link MTD-B: MTD-B1

Inflow Area = 1.220 ac, 100.00% Impervious, Inflow Depth = 3.08" for 2-MER 2YR event  
Inflow = 3.32 cfs @ 12.14 hrs, Volume= 0.313 af  
Primary = 3.32 cfs @ 12.14 hrs, Volume= 0.313 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link MTD-B: MTD-B1

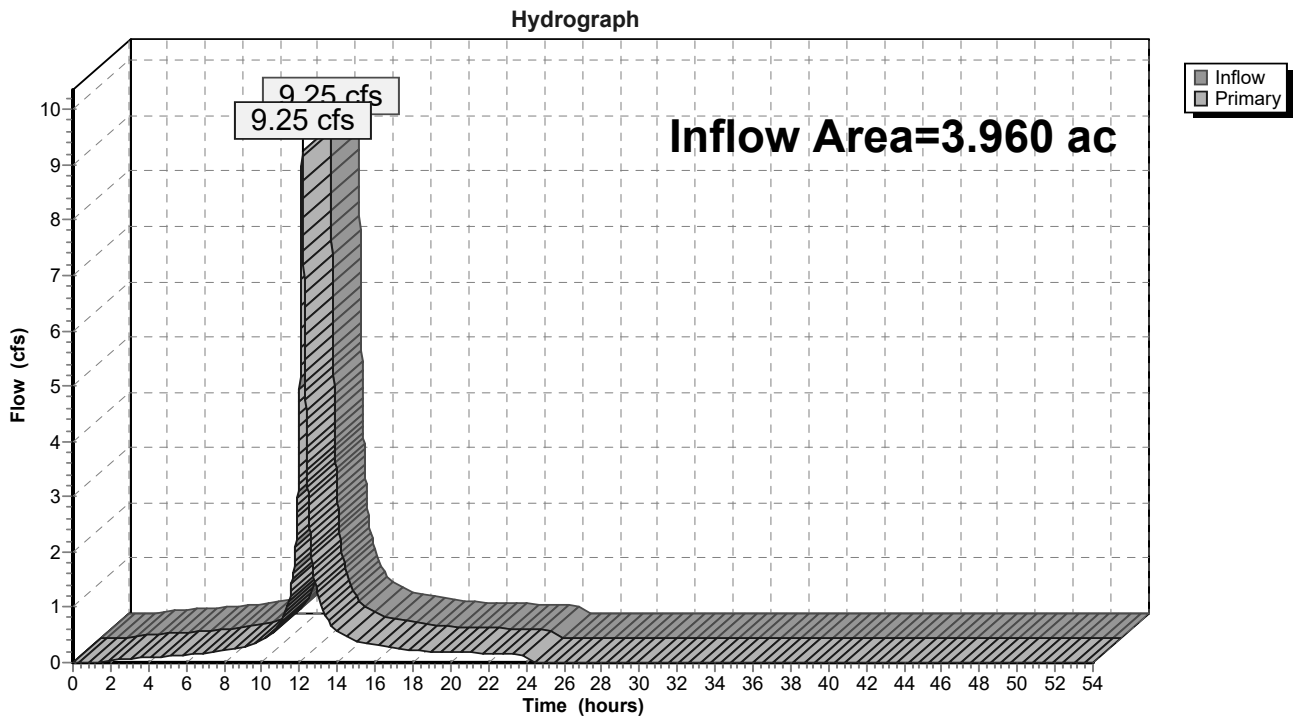


### Summary for Link POA-B1\*: POA-B1\* (ROCKY BROOK CULVERT)

Inflow Area = 3.960 ac, 73.91% Impervious, Inflow Depth = 2.61" for 2-MER 2YR event  
Inflow = 9.25 cfs @ 12.14 hrs, Volume= 0.860 af  
Primary = 9.25 cfs @ 12.14 hrs, Volume= 0.860 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-B1\*: POA-B1\* (ROCKY BROOK CULVERT)

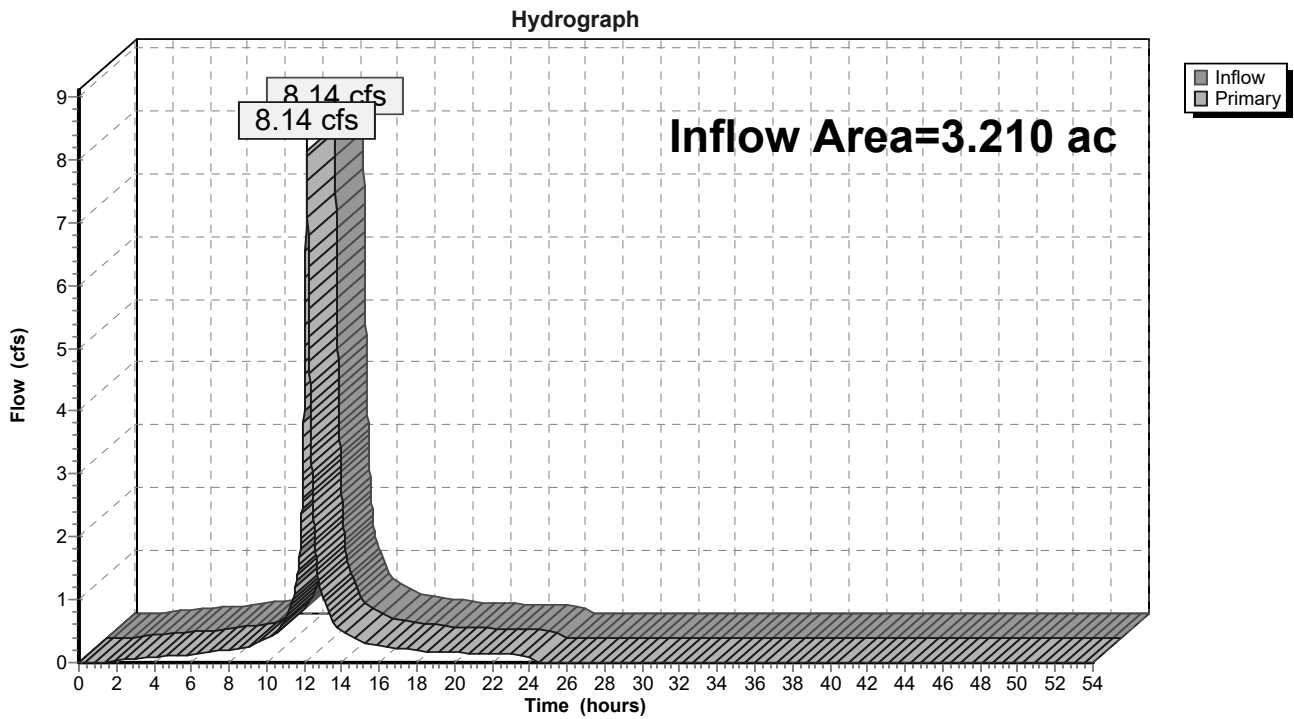


### Summary for Link POA-B1A\*: POA-B1A (ROCKY BROOK 24" HW)

Inflow Area = 3.210 ac, 85.26% Impervious, Inflow Depth = 2.84" for 2-MER 2YR event  
Inflow = 8.14 cfs @ 12.14 hrs, Volume= 0.760 af  
Primary = 8.14 cfs @ 12.14 hrs, Volume= 0.760 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-B1A\*: POA-B1A (ROCKY BROOK 24" HW)



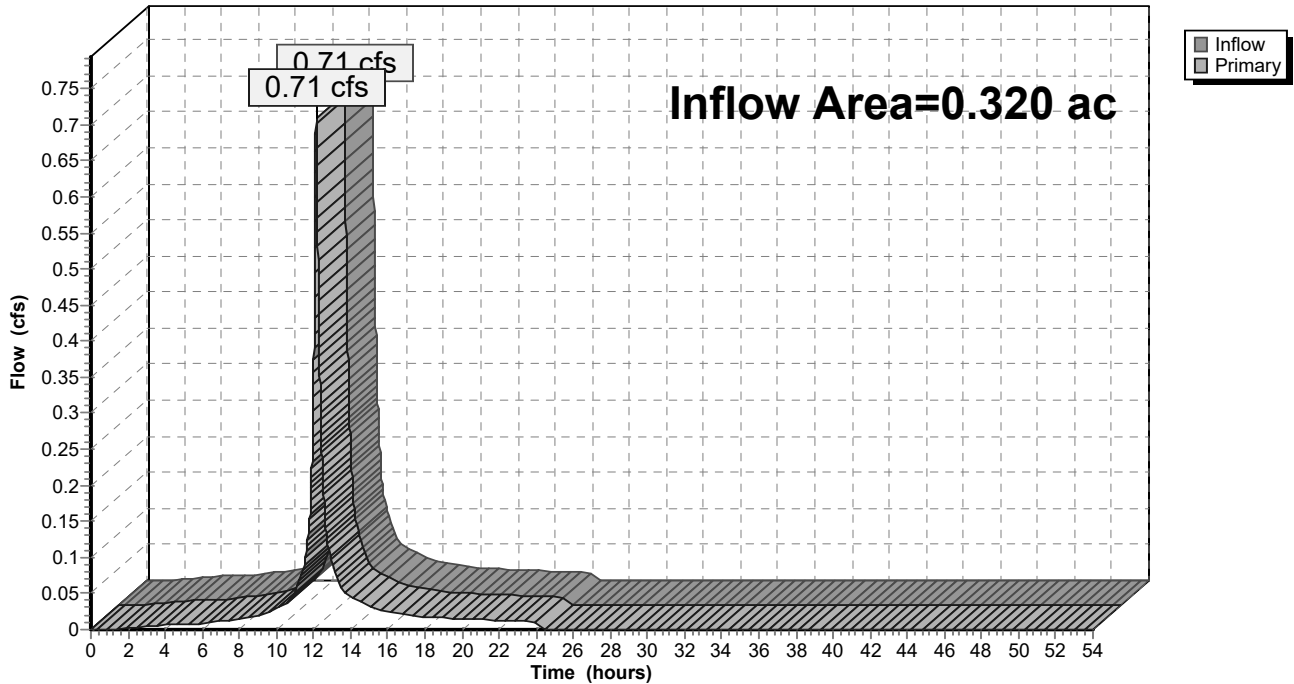
### Summary for Link POA-B2\*: POA-B2 (BANK ST)

Inflow Area = 0.320 ac, 59.37% Impervious, Inflow Depth = 2.43" for 2-MER 2YR event  
Inflow = 0.71 cfs @ 12.14 hrs, Volume= 0.065 af  
Primary = 0.71 cfs @ 12.14 hrs, Volume= 0.065 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-B2\*: POA-B2 (BANK ST)

Hydrograph

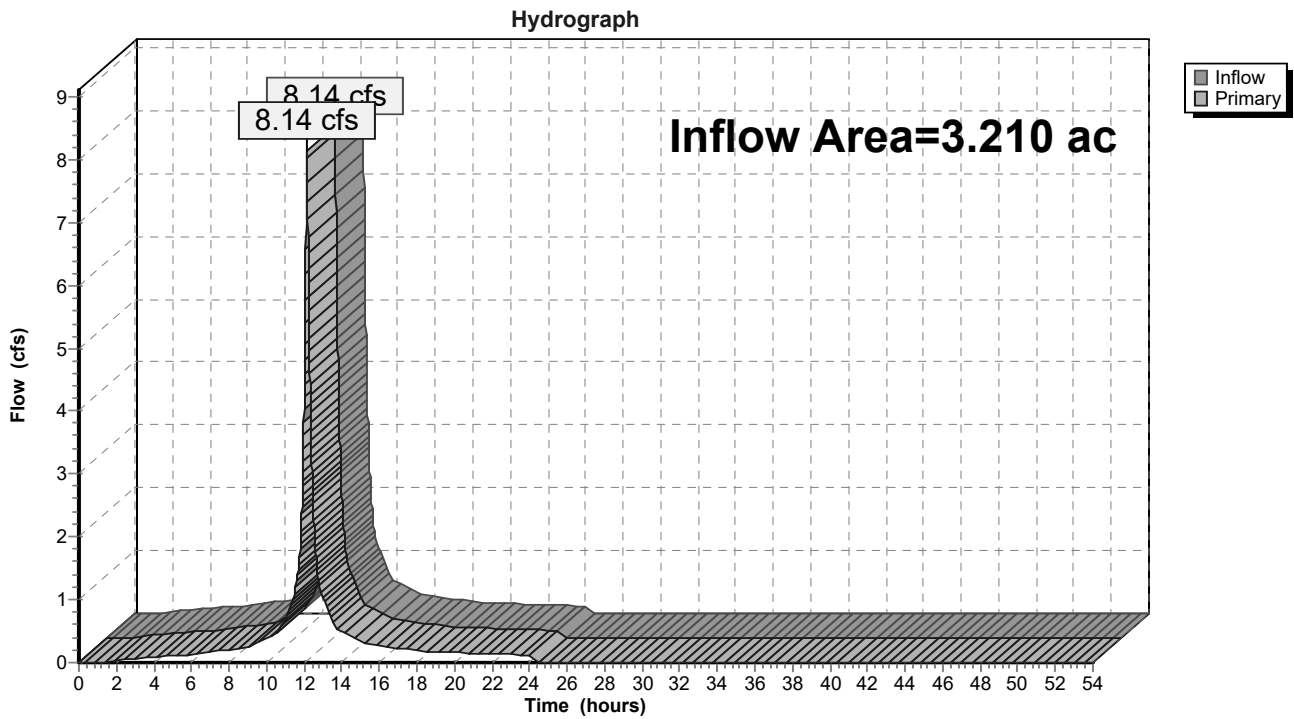


### Summary for Link POA-E4\*: POA-E4\* (24" RCP)

Inflow Area = 3.210 ac, 85.26% Impervious, Inflow Depth = 2.84" for 2-MER 2YR event  
Inflow = 8.14 cfs @ 12.14 hrs, Volume= 0.760 af  
Primary = 8.14 cfs @ 12.14 hrs, Volume= 0.760 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-E4\*: POA-E4\* (24" RCP)



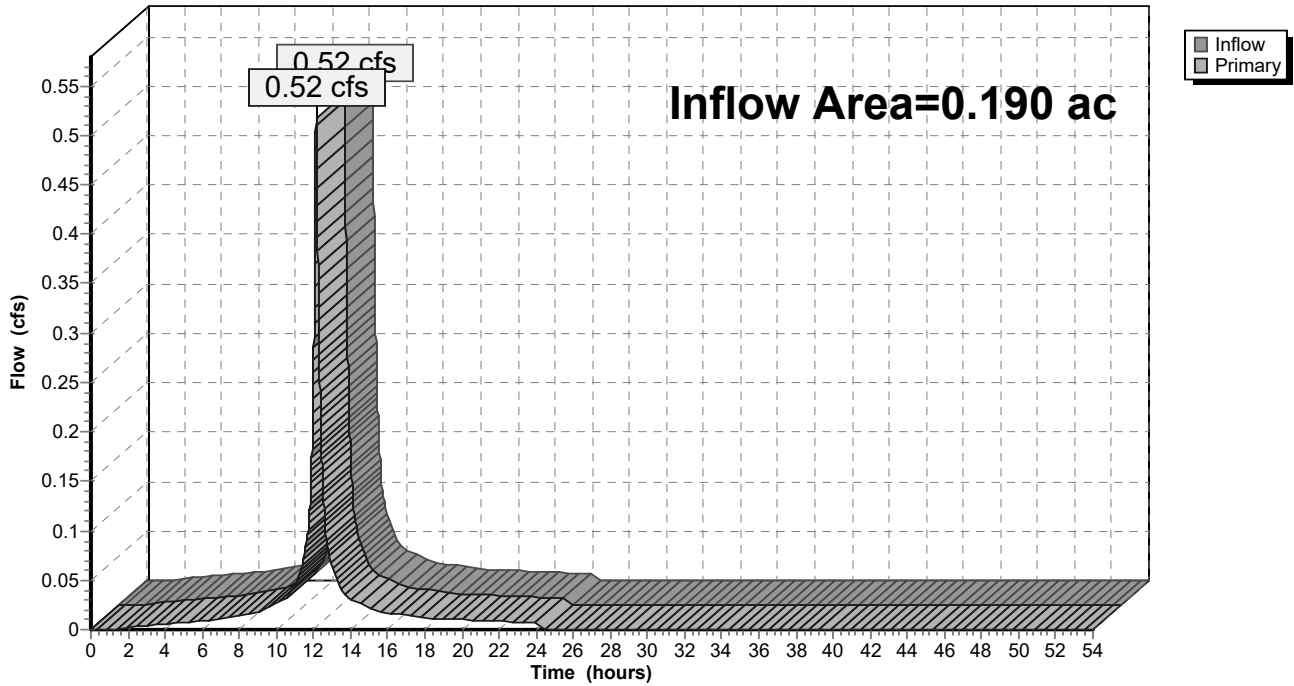
**Summary for Link POA-E5\*: POA-E5 (10" TER\*)**

Inflow Area = 0.190 ac, 100.00% Impervious, Inflow Depth = 3.08" for 2-MER 2YR event  
Inflow = 0.52 cfs @ 12.14 hrs, Volume= 0.049 af  
Primary = 0.52 cfs @ 12.14 hrs, Volume= 0.049 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

**Link POA-E5\*: POA-E5 (10" TER\*)**

Hydrograph





Time span=0.00-54.00 hrs, dt=0.01 hrs, 5401 points  
 Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. U1 as Pervious  
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

<b>Subcatchment PB-1: PB-1</b>	Runoff Area=0.253 ac 41.50% Impervious Runoff Depth=3.38" Tc=6.0 min CN=74/98 Runoff=0.79 cfs 0.071 af
<b>Subcatchment PB-10: PB-10</b>	Runoff Area=0.560 ac 0.00% Impervious Runoff Depth=2.38" Tc=6.0 min CN=74/0 Runoff=1.33 cfs 0.111 af
<b>Subcatchment PB-2: PB-2</b>	Runoff Area=0.830 ac 100.00% Impervious Runoff Depth=4.78" Tc=6.0 min CN=0/98 Runoff=3.45 cfs 0.331 af
<b>Subcatchment PB-3: PB-3</b>	Runoff Area=0.170 ac 23.53% Impervious Runoff Depth=3.35" Tc=6.0 min CN=80/98 Runoff=0.54 cfs 0.047 af
<b>Subcatchment PB-4: PB-4</b>	Runoff Area=0.500 ac 100.00% Impervious Runoff Depth=4.78" Tc=6.0 min CN=0/98 Runoff=2.08 cfs 0.199 af
<b>Subcatchment PB-5: PB-5</b>	Runoff Area=0.530 ac 100.00% Impervious Runoff Depth=4.78" Tc=6.0 min CN=0/98 Runoff=2.20 cfs 0.211 af
<b>Subcatchment PB-6: PB-6</b>	Runoff Area=0.377 ac 13.79% Impervious Runoff Depth=3.33" Tc=6.0 min CN=82/98 Runoff=1.22 cfs 0.105 af
<b>Subcatchment PB-7: PB-7</b>	Runoff Area=0.190 ac 100.00% Impervious Runoff Depth=4.78" Tc=6.0 min CN=0/98 Runoff=0.79 cfs 0.076 af
<b>Subcatchment PB-8-ROW: PB-8-ROW</b>	Runoff Area=0.150 ac 100.00% Impervious Runoff Depth=4.78" Tc=6.0 min CN=0/98 Runoff=0.62 cfs 0.060 af
<b>Subcatchment PB-9: PB-9</b>	Runoff Area=0.720 ac 100.00% Impervious Runoff Depth=4.78" Tc=6.0 min CN=0/98 Runoff=2.99 cfs 0.287 af
<b>Reach 24" RCP: 24" RCP</b>	Avg. Flow Depth=0.92' Max Vel=9.03 fps Inflow=12.73 cfs 1.204 af 24.0" Round Pipe n=0.013 L=36.0' S=0.0169 '/' Capacity=29.45 cfs Outflow=12.73 cfs 1.204 af
<b>Link MTD-B: MTD-B1</b>	Inflow=5.07 cfs 0.486 af Primary=5.07 cfs 0.486 af
<b>Link POA-B1*: POA-B1* (ROCKY BROOK CULVERT)</b>	Inflow=14.85 cfs 1.391 af Primary=14.85 cfs 1.391 af
<b>Link POA-B1A*: POA-B1A (ROCKY BROOK 24" HW)</b>	Inflow=12.73 cfs 1.204 af Primary=12.73 cfs 1.204 af
<b>Link POA-B2*: POA-B2 (BANK ST)</b>	Inflow=1.17 cfs 0.107 af Primary=1.17 cfs 0.107 af
<b>Link POA-E4*: POA-E4* (24" RCP)</b>	Inflow=12.73 cfs 1.204 af Primary=12.73 cfs 1.204 af

**200811\_Model**

*NRCC 24-hr C 3-MER 10YR Rainfall=5.02"*

Prepared by Maser Consulting

Printed 8/12/2020

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**Link POA-E5\*: POA-E5 (10" TER\*)**

Inflow=0.79 cfs 0.076 af  
Primary=0.79 cfs 0.076 af

**Total Runoff Area = 4.280 ac   Runoff Volume = 1.498 af   Average Runoff Depth = 4.20"**  
**27.17% Pervious = 1.163 ac   72.83% Impervious = 3.117 ac**

**Summary for Subcatchment PB-1: PB-1**

Runoff = 0.79 cfs @ 12.14 hrs, Volume= 0.071 af, Depth= 3.38"

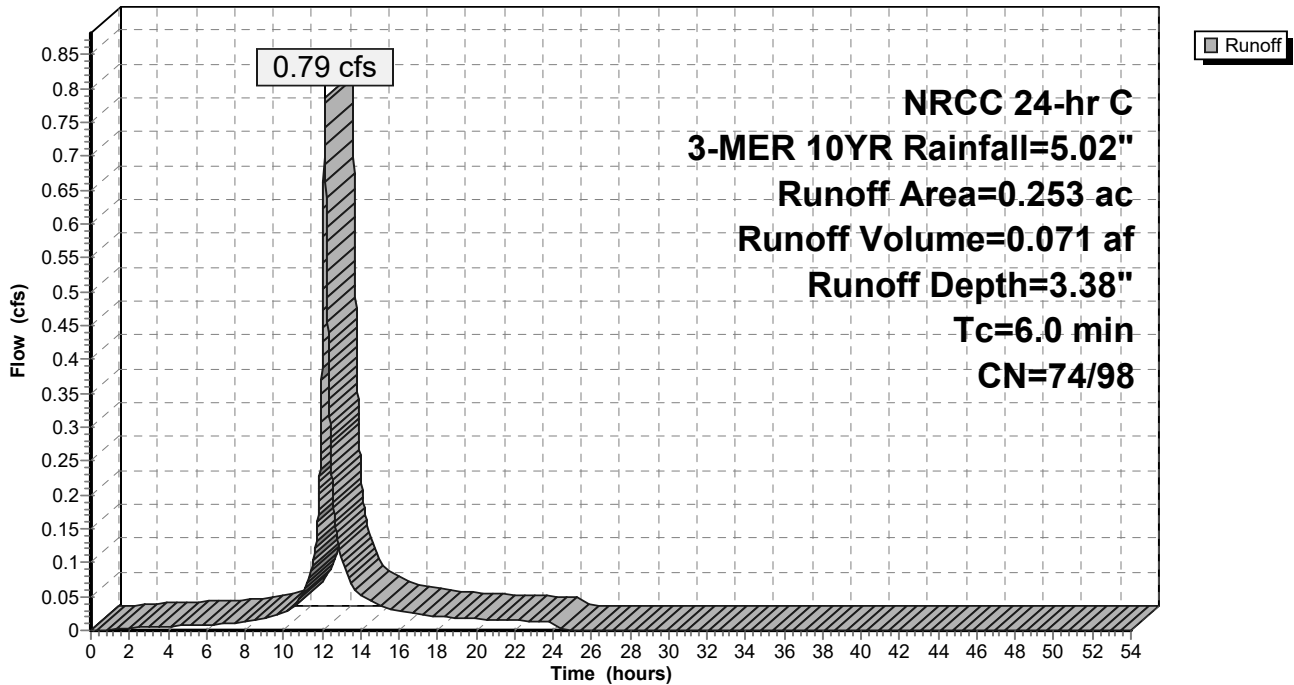
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 3-MER 10YR Rainfall=5.02"

Area (ac)	CN	Description
* 0.105	98	Pool/Patio
0.148	74	>75% Grass cover, Good, HSG C
0.253	84	Weighted Average
0.148	74	58.50% Pervious Area
0.105	98	41.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PB-1: PB-1**

Hydrograph



Summary for Subcatchment PB-10: PB-10

Runoff = 1.33 cfs @ 12.14 hrs, Volume= 0.111 af, Depth= 2.38"

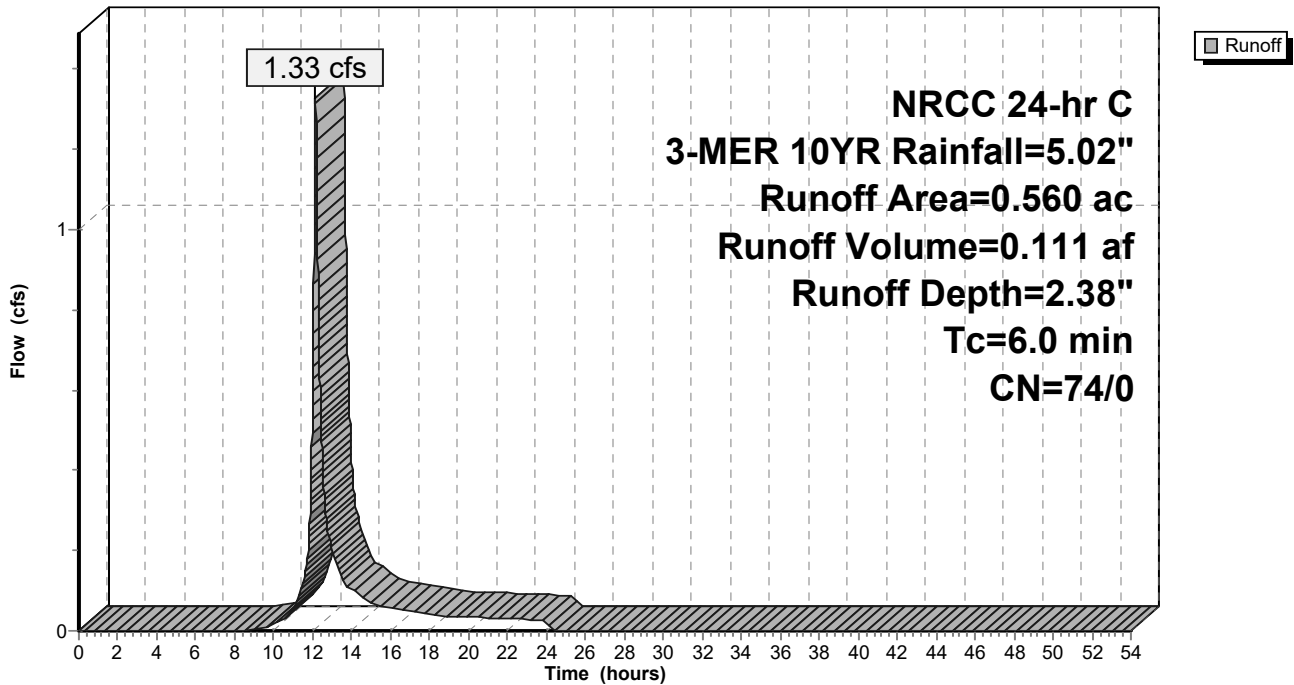
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 3-MER 10YR Rainfall=5.02"

Area (ac)	CN	Description
0.560	74	>75% Grass cover, Good, HSG C
0.560	74	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

Subcatchment PB-10: PB-10

Hydrograph



**Summary for Subcatchment PB-2: PB-2**

Runoff = 3.45 cfs @ 12.14 hrs, Volume= 0.331 af, Depth= 4.78"

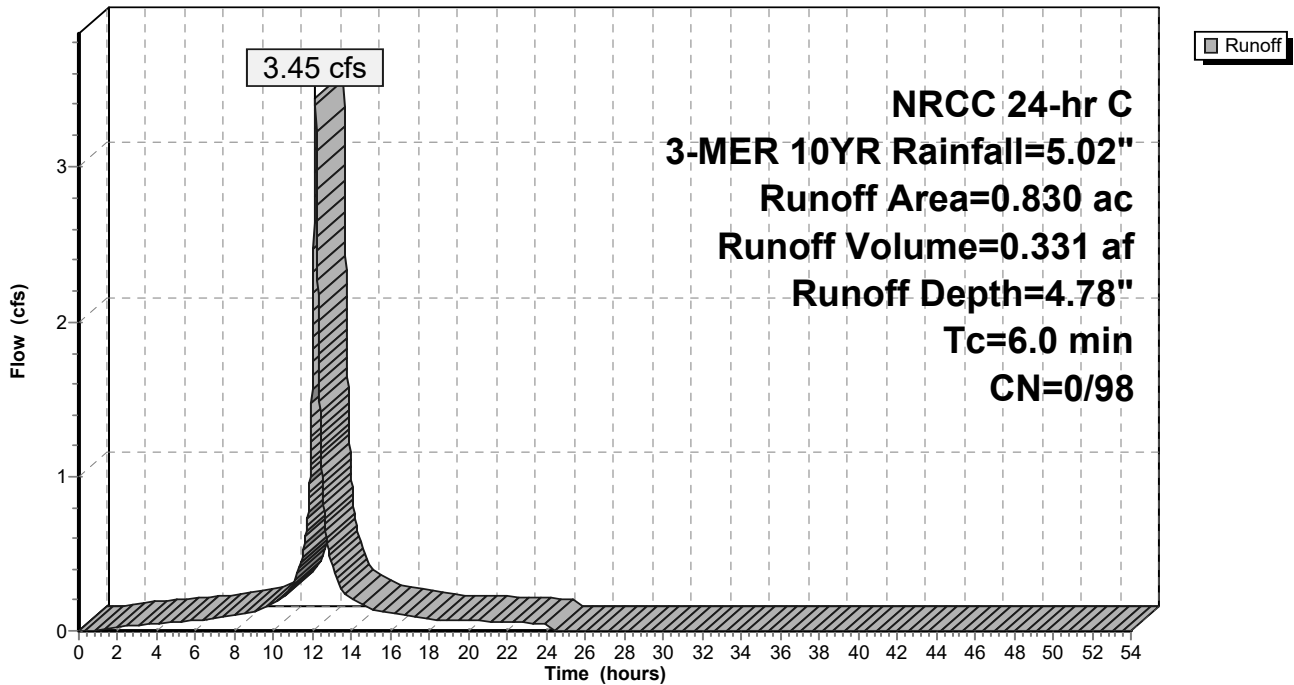
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 3-MER 10YR Rainfall=5.02"

Area (ac)	CN	Description
0.830	98	Roofs, HSG D
0.830	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PB-2: PB-2**

Hydrograph



**Summary for Subcatchment PB-3: PB-3**

Runoff = 0.54 cfs @ 12.14 hrs, Volume= 0.047 af, Depth= 3.35"

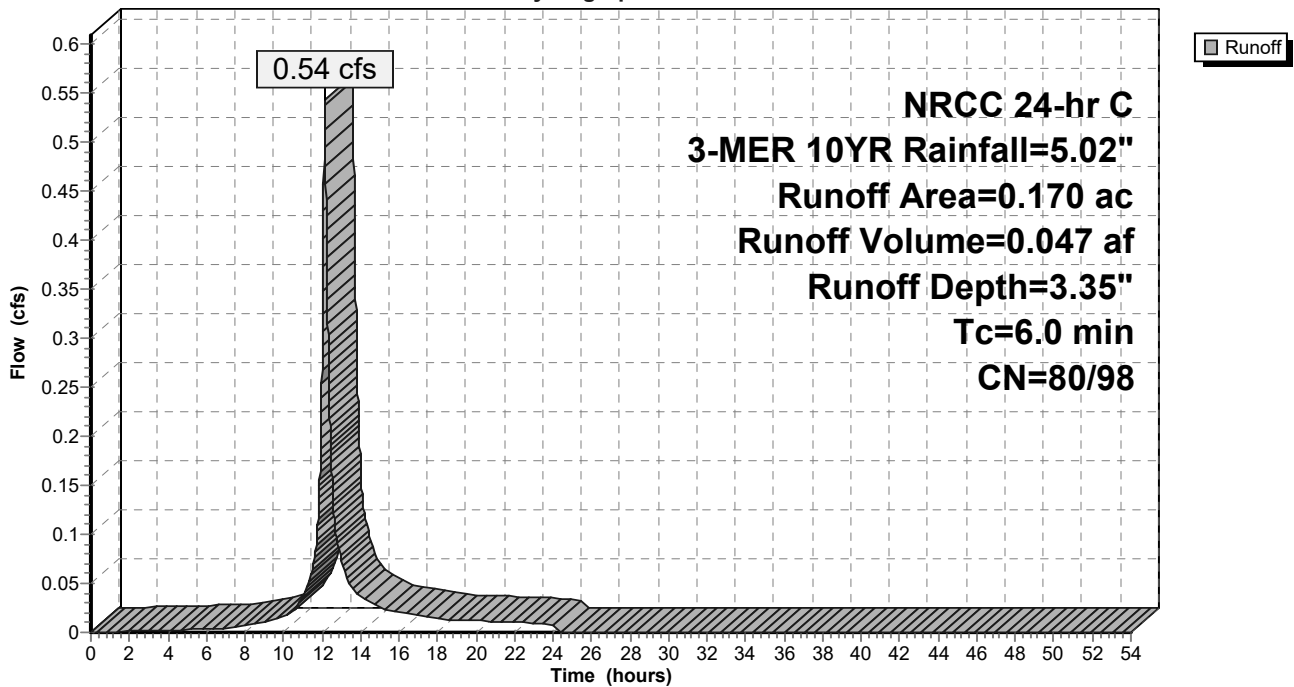
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 3-MER 10YR Rainfall=5.02"

Area (ac)	CN	Description
* 0.040	98	Sidewalks, HSG D
0.130	80	>75% Grass cover, Good, HSG D
0.170	84	Weighted Average
0.130	80	76.47% Pervious Area
0.040	98	23.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PB-3: PB-3**

Hydrograph



### Summary for Subcatchment PB-4: PB-4

Runoff = 2.08 cfs @ 12.14 hrs, Volume= 0.199 af, Depth= 4.78"

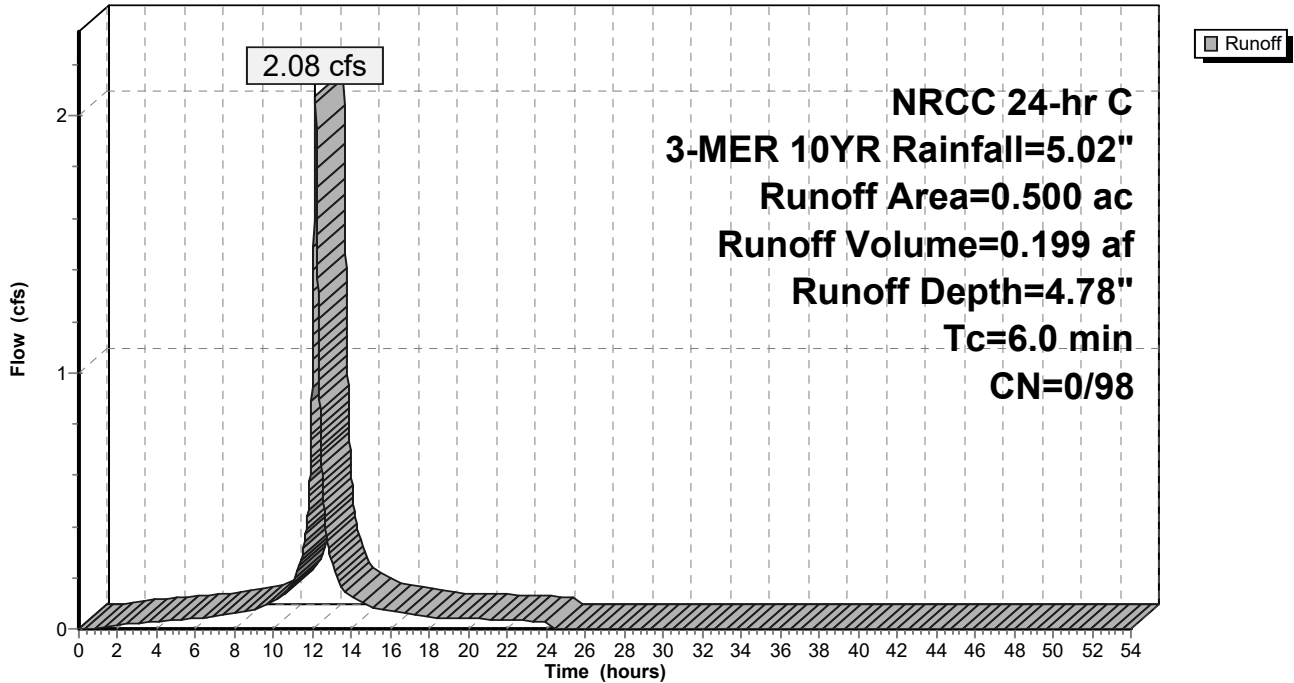
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 3-MER 10YR Rainfall=5.02"

Area (ac)	CN	Description
0.500	98	Paved parking, HSG D
0.500	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

### Subcatchment PB-4: PB-4

Hydrograph



**Summary for Subcatchment PB-5: PB-5**

Runoff = 2.20 cfs @ 12.14 hrs, Volume= 0.211 af, Depth= 4.78"

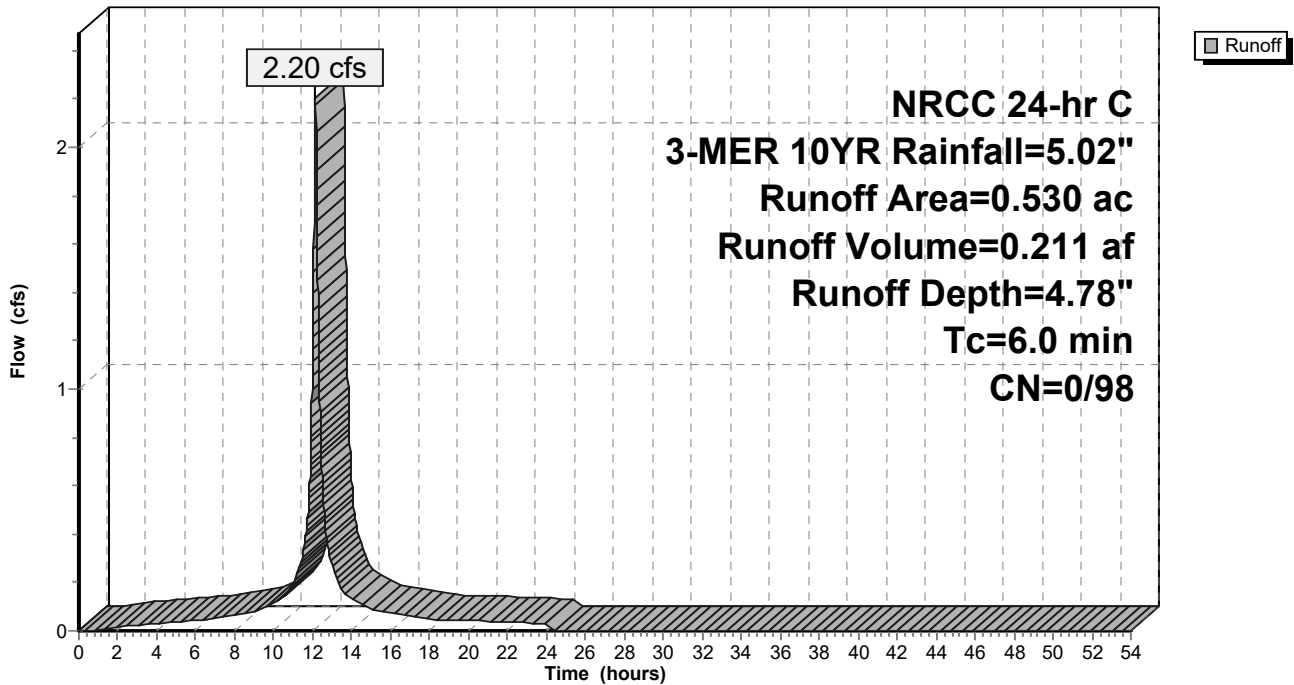
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 3-MER 10YR Rainfall=5.02"

Area (ac)	CN	Description
0.530	98	Roofs, HSG D
0.530	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PB-5: PB-5**

Hydrograph





**Summary for Subcatchment PB-6: PB-6**

Runoff = 1.22 cfs @ 12.14 hrs, Volume= 0.105 af, Depth= 3.33"

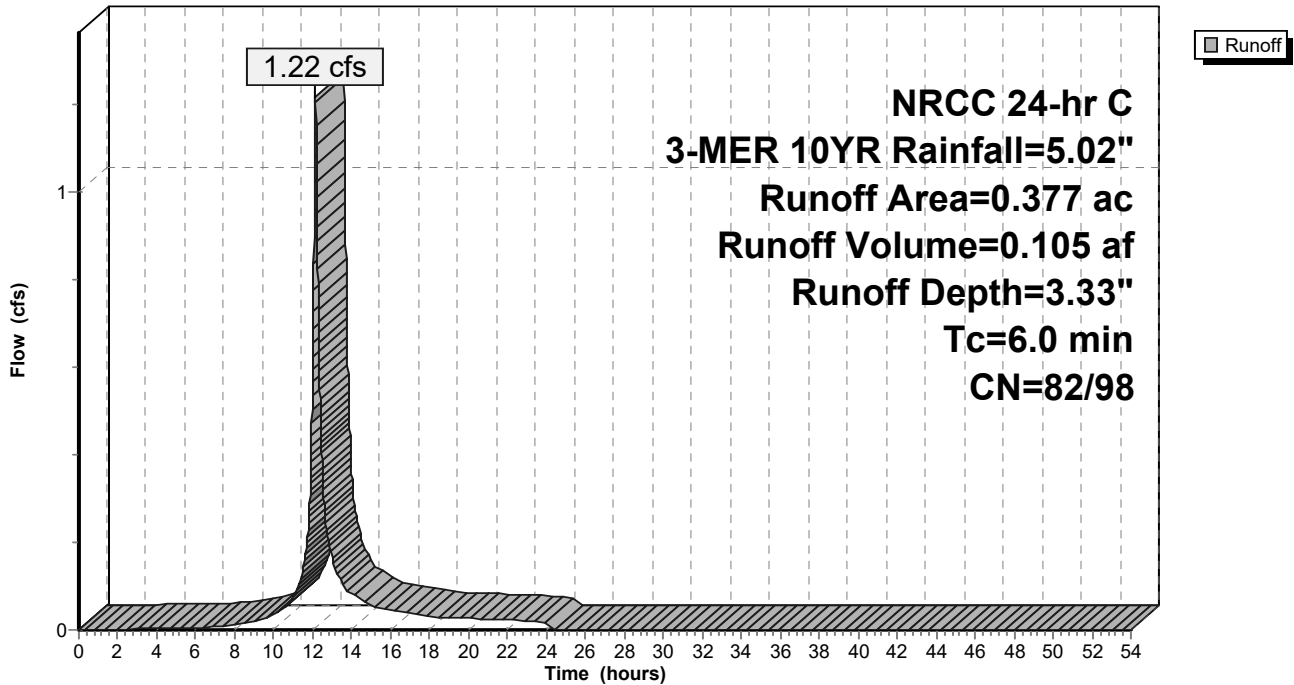
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 3-MER 10YR Rainfall=5.02"

Area (ac)	CN	Description
* 0.052	98	Sidewalks, HSG D
0.295	80	>75% Grass cover, Good, HSG D
0.030	98	Unconnected roofs, HSG D
0.377	84	Weighted Average
0.325	82	86.21% Pervious Area
0.052	98	13.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PB-6: PB-6**

Hydrograph



**Summary for Subcatchment PB-7: PB-7**

Runoff = 0.79 cfs @ 12.14 hrs, Volume= 0.076 af, Depth= 4.78"

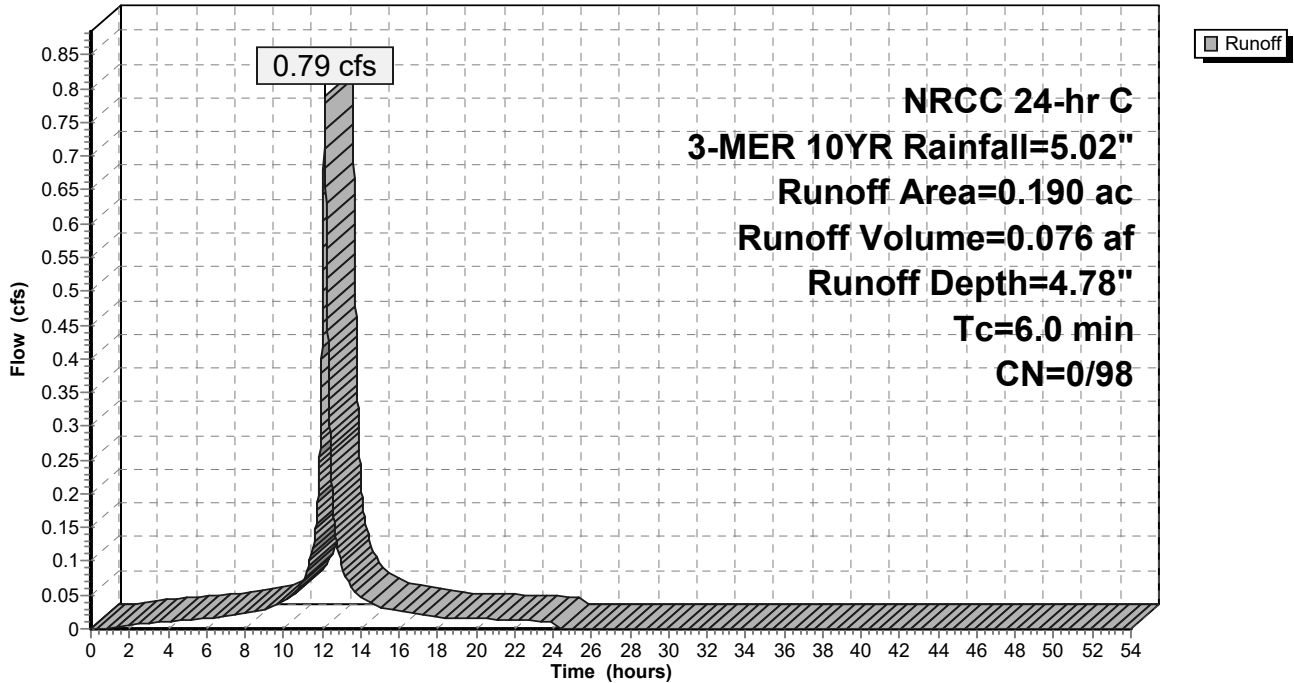
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 3-MER 10YR Rainfall=5.02"

Area (ac)	CN	Description
0.190	98	Roofs, HSG D
0.190	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PB-7: PB-7**

Hydrograph



**Summary for Subcatchment PB-8-ROW: PB-8-ROW**

Runoff = 0.62 cfs @ 12.14 hrs, Volume= 0.060 af, Depth= 4.78"

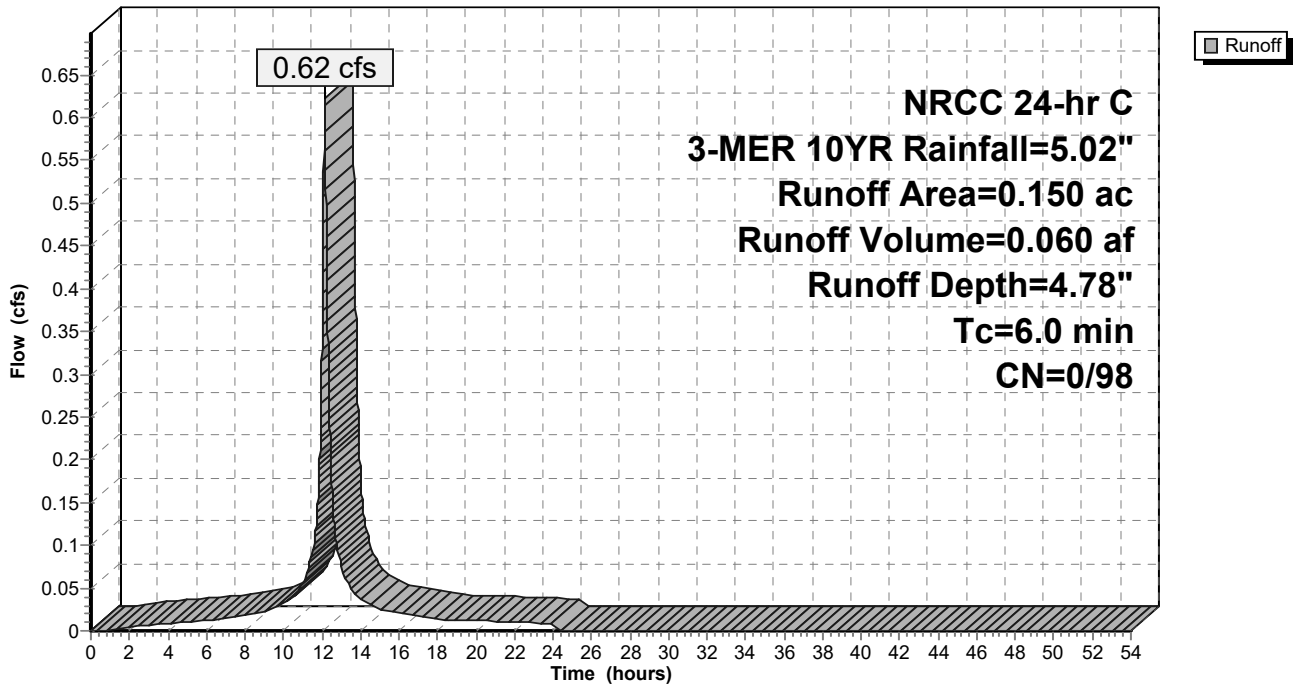
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 3-MER 10YR Rainfall=5.02"

Area (ac)	CN	Description
0.150	98	Paved parking, HSG D
0.150	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PB-8-ROW: PB-8-ROW**

Hydrograph



**Summary for Subcatchment PB-9: PB-9**

Runoff = 2.99 cfs @ 12.14 hrs, Volume= 0.287 af, Depth= 4.78"

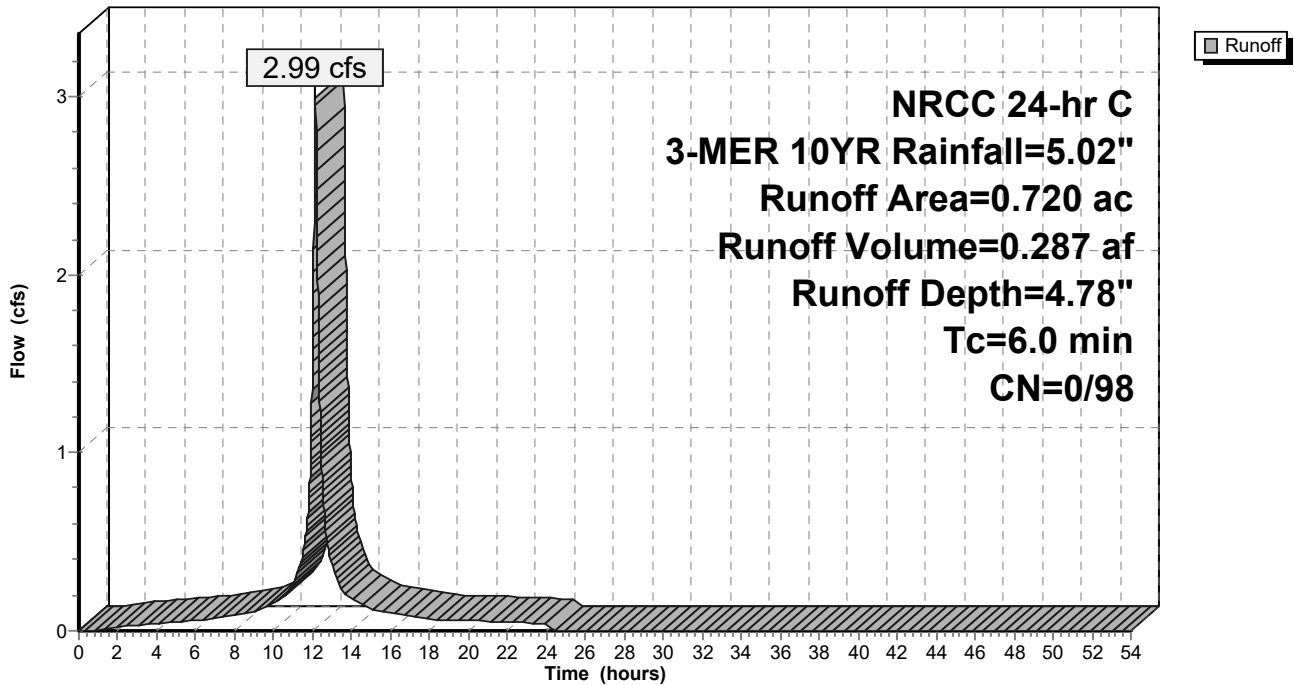
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 3-MER 10YR Rainfall=5.02"

Area (ac)	CN	Description
0.720	98	Paved parking, HSG A
0.720	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PB-9: PB-9**

Hydrograph



### Summary for Reach 24" RCP: 24" RCP

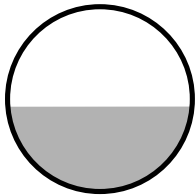
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 3.210 ac, 85.26% Impervious, Inflow Depth = 4.50" for 3-MER 10YR event  
 Inflow = 12.73 cfs @ 12.14 hrs, Volume= 1.204 af  
 Outflow = 12.73 cfs @ 12.14 hrs, Volume= 1.204 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs  
 Max. Velocity= 9.03 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 3.20 fps, Avg. Travel Time= 0.2 min

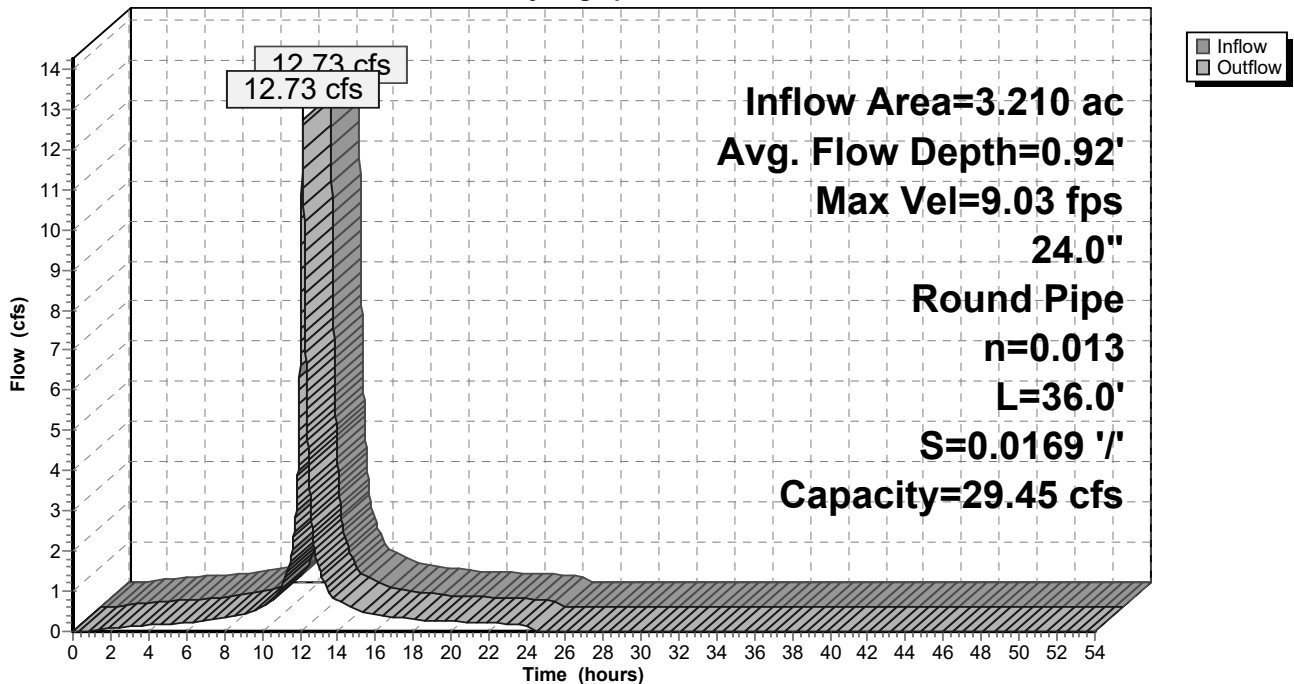
Peak Storage= 51 cf @ 12.14 hrs  
 Average Depth at Peak Storage= 0.92' , Surface Width= 1.99'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 29.45 cfs

24.0" Round Pipe  
 n= 0.013  
 Length= 36.0' Slope= 0.0169 '/'  
 Inlet Invert= 75.22', Outlet Invert= 74.61'



### Reach 24" RCP: 24" RCP

Hydrograph

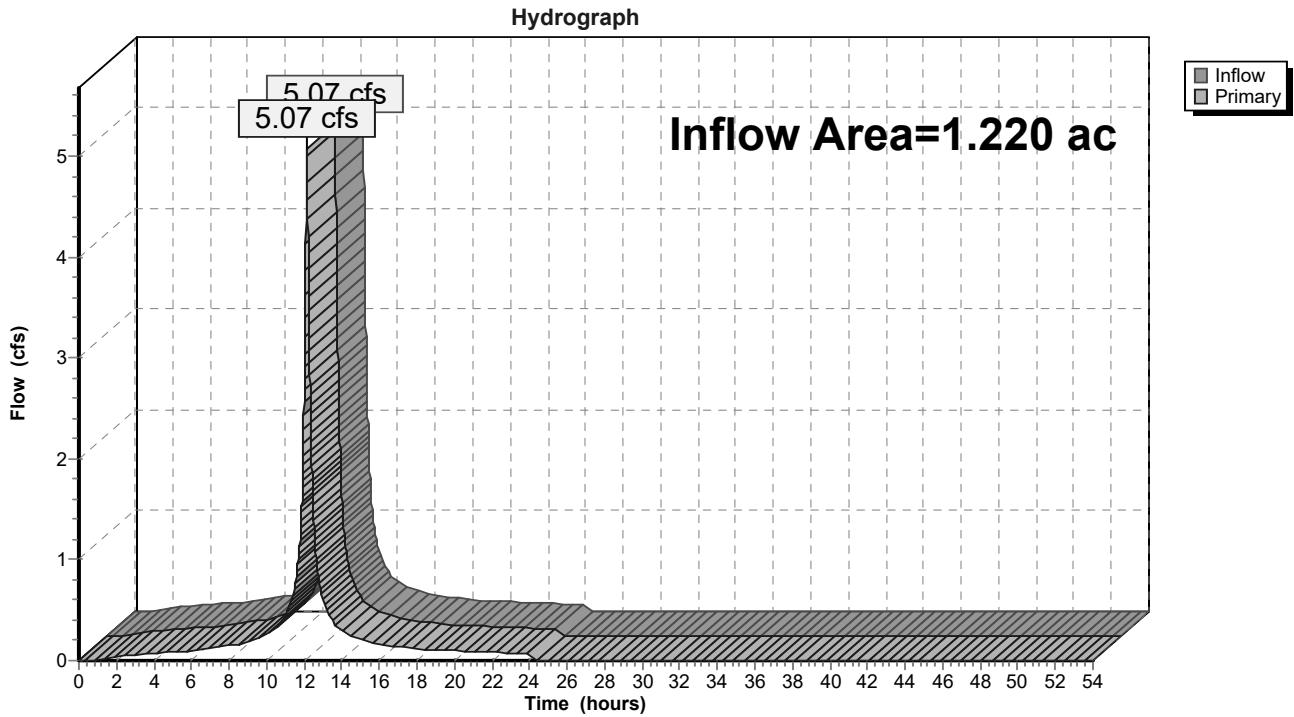


### Summary for Link MTD-B: MTD-B1

Inflow Area = 1.220 ac, 100.00% Impervious, Inflow Depth = 4.78" for 3-MER 10YR event  
Inflow = 5.07 cfs @ 12.14 hrs, Volume= 0.486 af  
Primary = 5.07 cfs @ 12.14 hrs, Volume= 0.486 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link MTD-B: MTD-B1

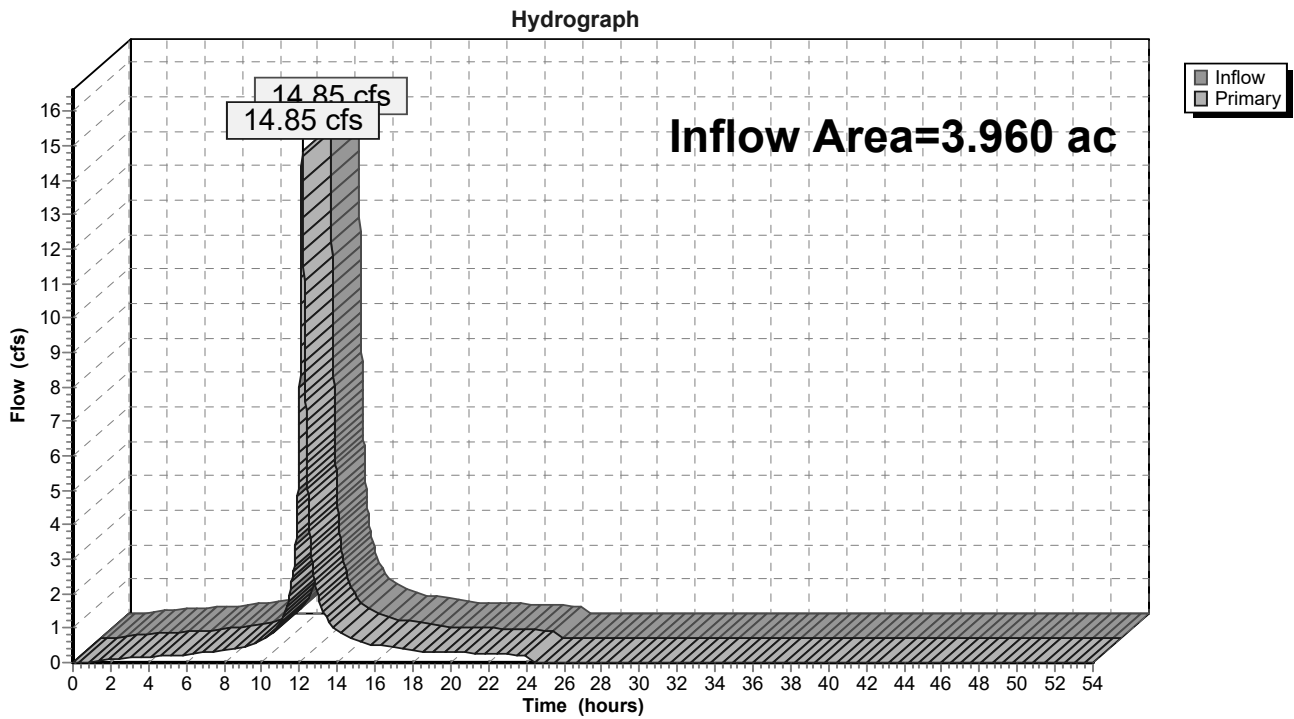


### Summary for Link POA-B1\*: POA-B1\* (ROCKY BROOK CULVERT)

Inflow Area = 3.960 ac, 73.91% Impervious, Inflow Depth = 4.22" for 3-MER 10YR event  
Inflow = 14.85 cfs @ 12.14 hrs, Volume= 1.391 af  
Primary = 14.85 cfs @ 12.14 hrs, Volume= 1.391 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-B1\*: POA-B1\* (ROCKY BROOK CULVERT)

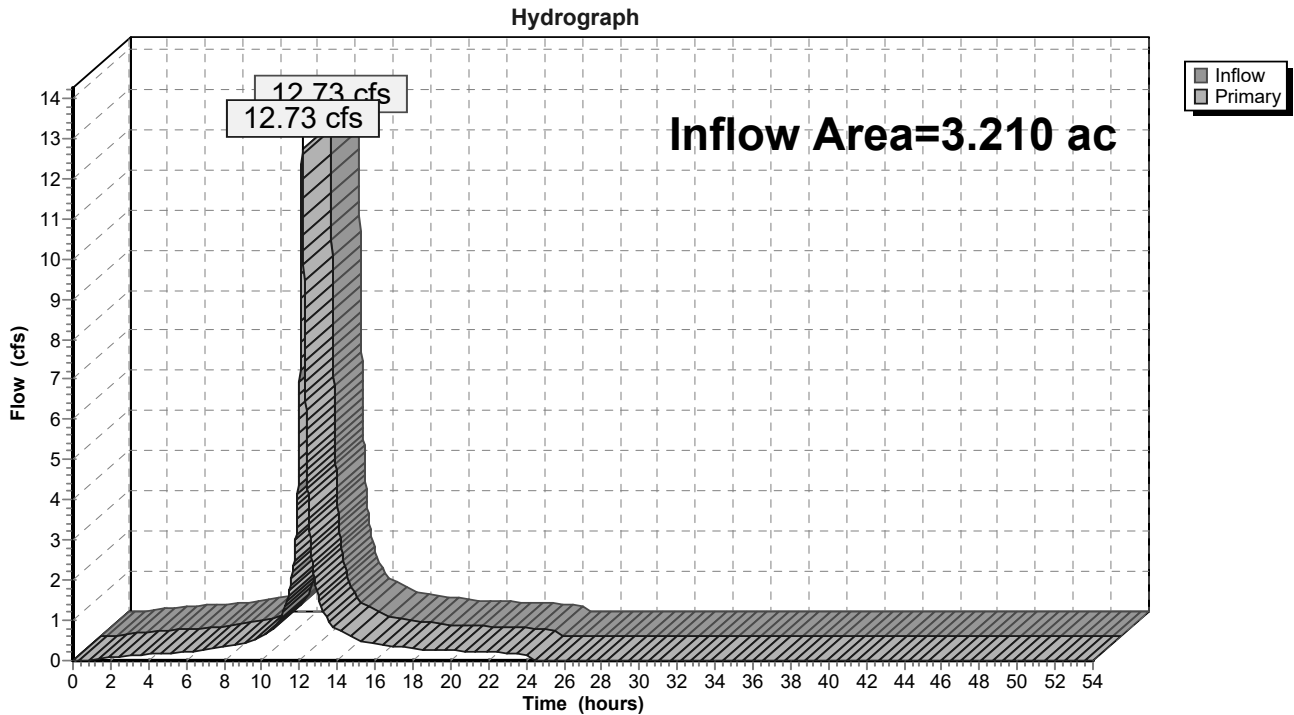


### Summary for Link POA-B1A\*: POA-B1A (ROCKY BROOK 24" HW)

Inflow Area = 3.210 ac, 85.26% Impervious, Inflow Depth = 4.50" for 3-MER 10YR event  
Inflow = 12.73 cfs @ 12.14 hrs, Volume= 1.204 af  
Primary = 12.73 cfs @ 12.14 hrs, Volume= 1.204 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-B1A\*: POA-B1A (ROCKY BROOK 24" HW)



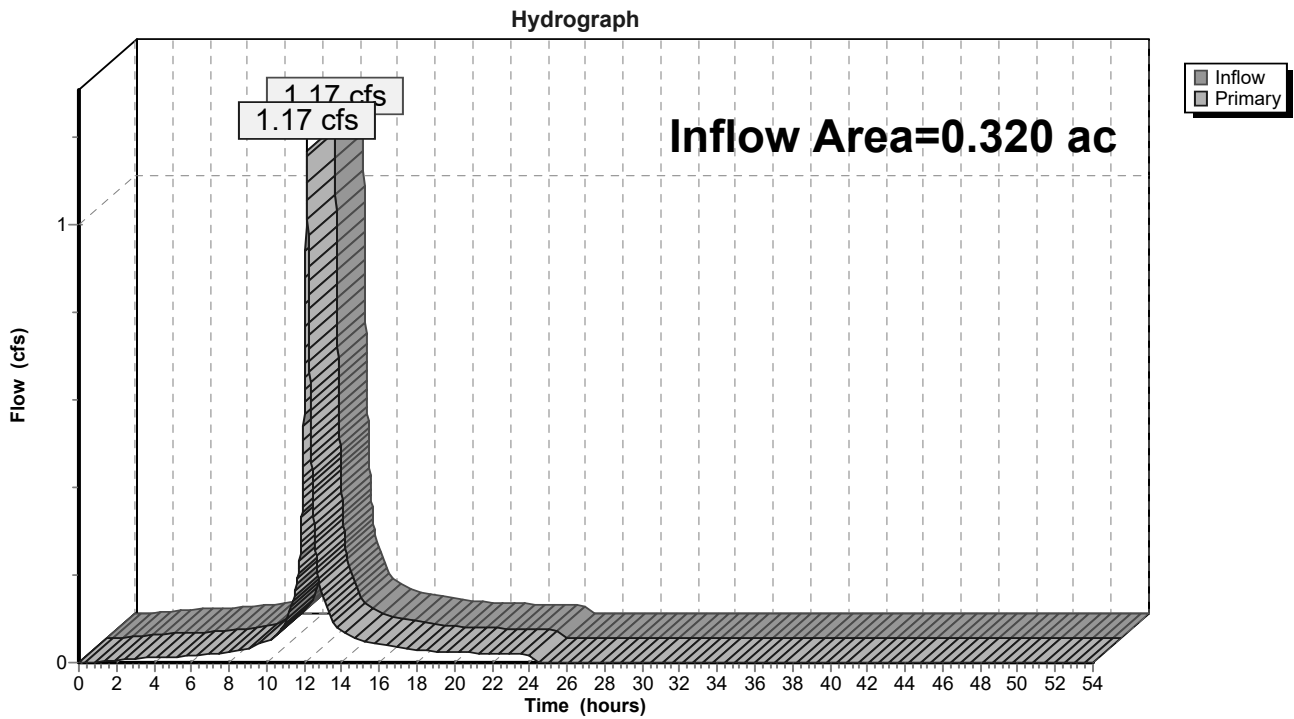


### Summary for Link POA-B2\*: POA-B2 (BANK ST)

Inflow Area = 0.320 ac, 59.37% Impervious, Inflow Depth = 4.02" for 3-MER 10YR event  
Inflow = 1.17 cfs @ 12.14 hrs, Volume= 0.107 af  
Primary = 1.17 cfs @ 12.14 hrs, Volume= 0.107 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-B2\*: POA-B2 (BANK ST)



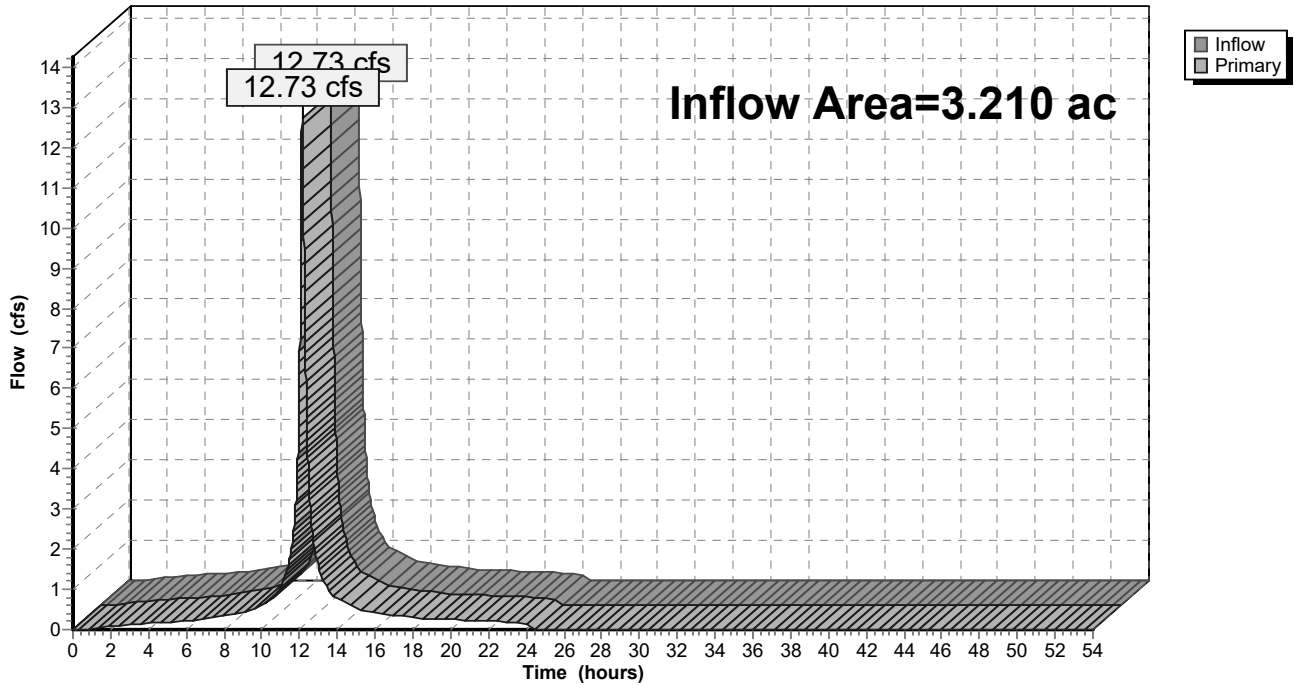
### Summary for Link POA-E4\*: POA-E4\* (24" RCP)

Inflow Area = 3.210 ac, 85.26% Impervious, Inflow Depth = 4.50" for 3-MER 10YR event  
Inflow = 12.73 cfs @ 12.14 hrs, Volume= 1.204 af  
Primary = 12.73 cfs @ 12.14 hrs, Volume= 1.204 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-E4\*: POA-E4\* (24" RCP)

Hydrograph



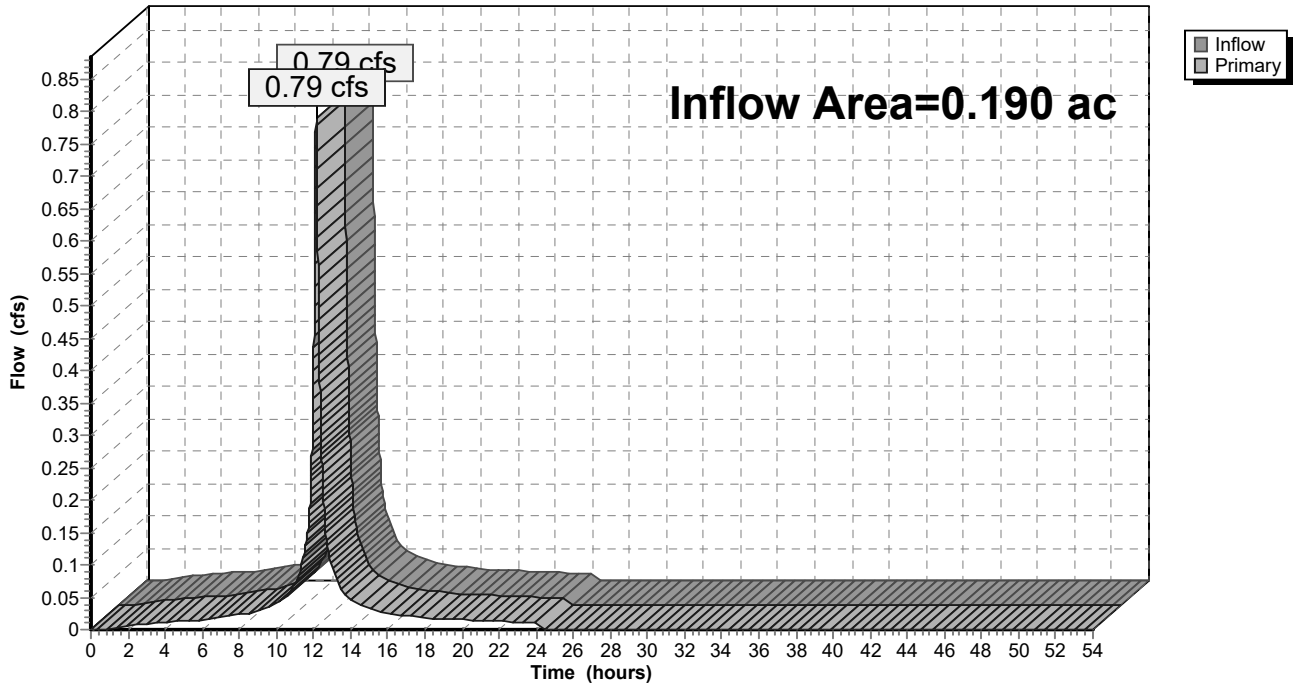
Summary for Link POA-E5\*: POA-E5 (10" TER\*)

Inflow Area = 0.190 ac, 100.00% Impervious, Inflow Depth = 4.78" for 3-MER 10YR event  
Inflow = 0.79 cfs @ 12.14 hrs, Volume= 0.076 af  
Primary = 0.79 cfs @ 12.14 hrs, Volume= 0.076 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

Link POA-E5\*: POA-E5 (10" TER\*)

Hydrograph



Time span=0.00-54.00 hrs, dt=0.01 hrs, 5401 points  
 Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious  
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

<b>Subcatchment PB-1: PB-1</b>	Runoff Area=0.253 ac 41.50% Impervious Runoff Depth=4.44" Tc=6.0 min CN=74/98 Runoff=1.04 cfs 0.094 af
<b>Subcatchment PB-10: PB-10</b>	Runoff Area=0.560 ac 0.00% Impervious Runoff Depth=3.35" Tc=6.0 min CN=74/0 Runoff=1.88 cfs 0.157 af
<b>Subcatchment PB-2: PB-2</b>	Runoff Area=0.830 ac 100.00% Impervious Runoff Depth=5.96" Tc=6.0 min CN=0/98 Runoff=4.27 cfs 0.412 af
<b>Subcatchment PB-3: PB-3</b>	Runoff Area=0.170 ac 23.53% Impervious Runoff Depth=4.43" Tc=6.0 min CN=80/98 Runoff=0.72 cfs 0.063 af
<b>Subcatchment PB-4: PB-4</b>	Runoff Area=0.500 ac 100.00% Impervious Runoff Depth=5.96" Tc=6.0 min CN=0/98 Runoff=2.57 cfs 0.248 af
<b>Subcatchment PB-5: PB-5</b>	Runoff Area=0.530 ac 100.00% Impervious Runoff Depth=5.96" Tc=6.0 min CN=0/98 Runoff=2.73 cfs 0.263 af
<b>Subcatchment PB-6: PB-6</b>	Runoff Area=0.377 ac 13.79% Impervious Runoff Depth=4.42" Tc=6.0 min CN=82/98 Runoff=1.60 cfs 0.139 af
<b>Subcatchment PB-7: PB-7</b>	Runoff Area=0.190 ac 100.00% Impervious Runoff Depth=5.96" Tc=6.0 min CN=0/98 Runoff=0.98 cfs 0.094 af
<b>Subcatchment PB-8-ROW: PB-8-ROW</b>	Runoff Area=0.150 ac 100.00% Impervious Runoff Depth=5.96" Tc=6.0 min CN=0/98 Runoff=0.77 cfs 0.075 af
<b>Subcatchment PB-9: PB-9</b>	Runoff Area=0.720 ac 100.00% Impervious Runoff Depth=5.96" Tc=6.0 min CN=0/98 Runoff=3.70 cfs 0.358 af
<b>Reach 24" RCP: 24" RCP</b>	Avg. Flow Depth=1.05' Max Vel=9.56 fps Inflow=15.91 cfs 1.514 af 24.0" Round Pipe n=0.013 L=36.0' S=0.0169 '/' Capacity=29.45 cfs Outflow=15.91 cfs 1.514 af
<b>Link MTD-B: MTD-B1</b>	Inflow=6.28 cfs 0.606 af Primary=6.28 cfs 0.606 af
<b>Link POA-B1*: POA-B1* (ROCKY BROOK CULVERT)</b>	Inflow=18.77 cfs 1.765 af Primary=18.77 cfs 1.765 af
<b>Link POA-B1A*: POA-B1A (ROCKY BROOK 24" HW)</b>	Inflow=15.91 cfs 1.514 af Primary=15.91 cfs 1.514 af
<b>Link POA-B2*: POA-B2 (BANK ST)</b>	Inflow=1.49 cfs 0.137 af Primary=1.49 cfs 0.137 af
<b>Link POA-E4*: POA-E4* (24" RCP)</b>	Inflow=15.91 cfs 1.514 af Primary=15.91 cfs 1.514 af

**200811\_Model**

*NRCC 24-hr C 4-MER 25YR Rainfall=6.20"*

Prepared by Maser Consulting

Printed 8/12/2020

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**Link POA-E5\*: POA-E5 (10" TER\*)**

Inflow=0.98 cfs 0.094 af  
Primary=0.98 cfs 0.094 af

**Total Runoff Area = 4.280 ac   Runoff Volume = 1.902 af   Average Runoff Depth = 5.33"**  
**27.17% Pervious = 1.163 ac   72.83% Impervious = 3.117 ac**

**Summary for Subcatchment PB-1: PB-1**

Runoff = 1.04 cfs @ 12.14 hrs, Volume= 0.094 af, Depth= 4.44"

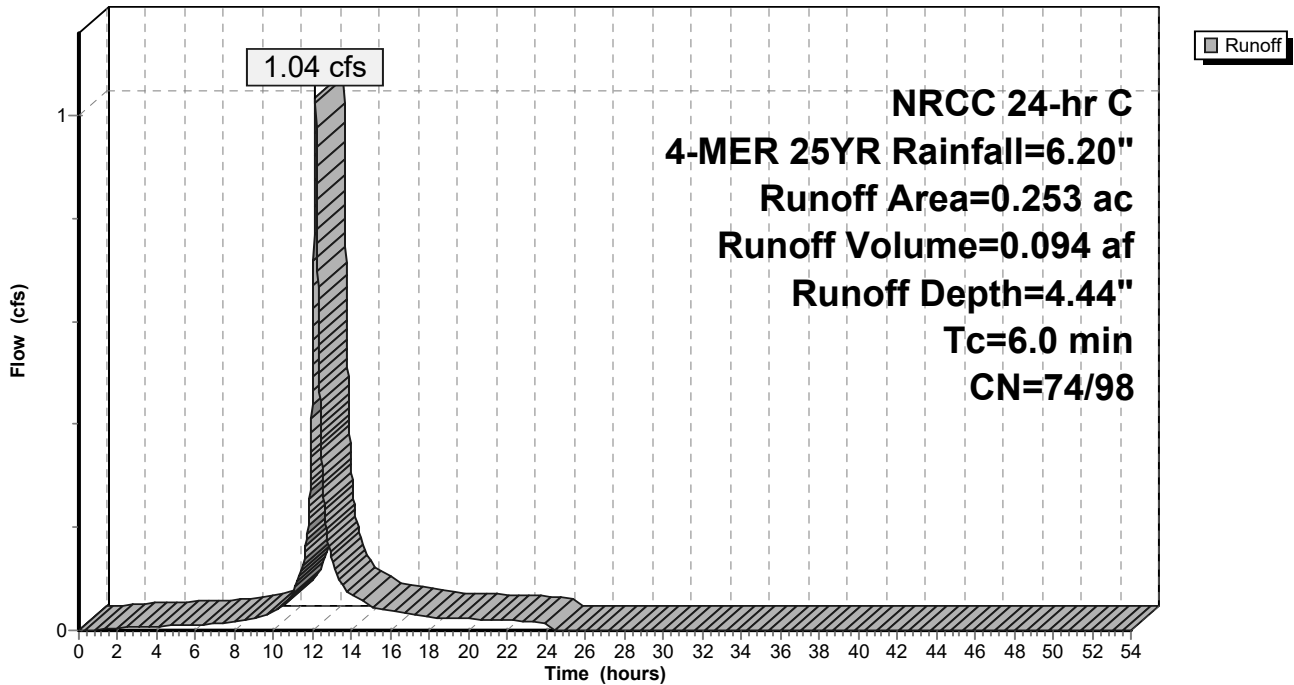
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 4-MER 25YR Rainfall=6.20"

Area (ac)	CN	Description
* 0.105	98	Pool/Patio
0.148	74	>75% Grass cover, Good, HSG C
0.253	84	Weighted Average
0.148	74	58.50% Pervious Area
0.105	98	41.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PB-1: PB-1**

Hydrograph



**Summary for Subcatchment PB-10: PB-10**

Runoff = 1.88 cfs @ 12.14 hrs, Volume= 0.157 af, Depth= 3.35"

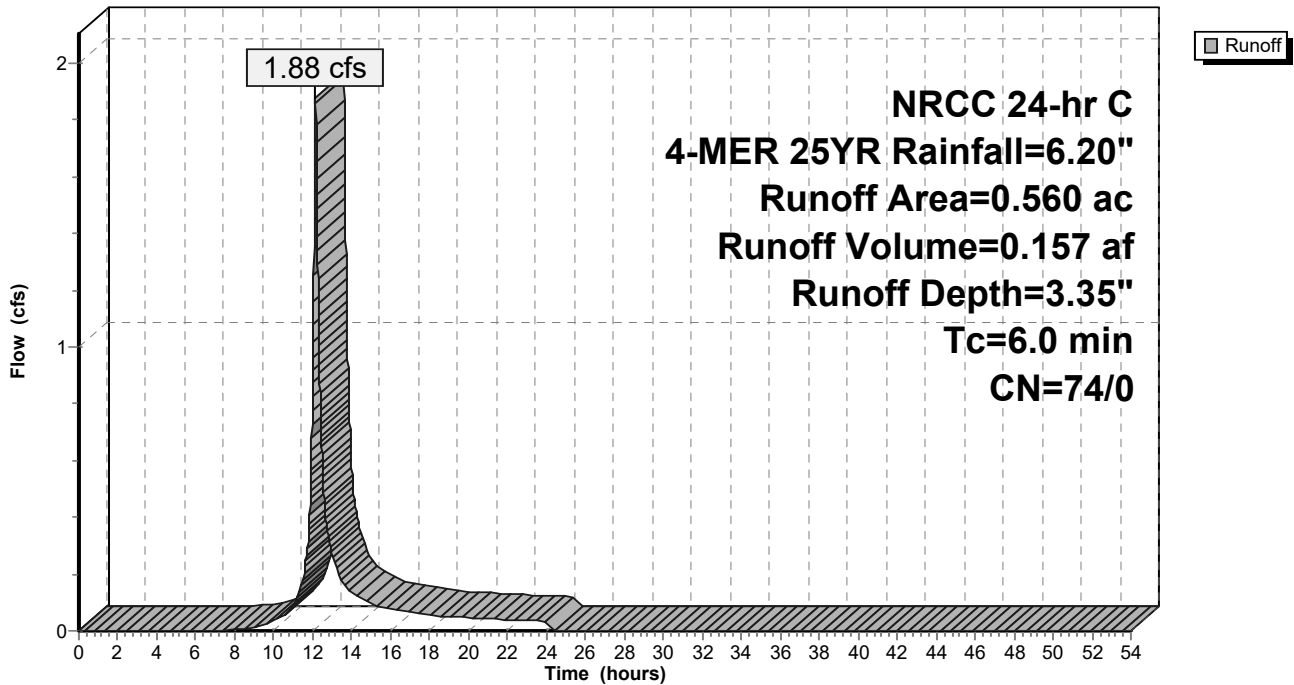
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 4-MER 25YR Rainfall=6.20"

Area (ac)	CN	Description
0.560	74	>75% Grass cover, Good, HSG C
0.560	74	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PB-10: PB-10**

Hydrograph



**Summary for Subcatchment PB-2: PB-2**

Runoff = 4.27 cfs @ 12.14 hrs, Volume= 0.412 af, Depth= 5.96"

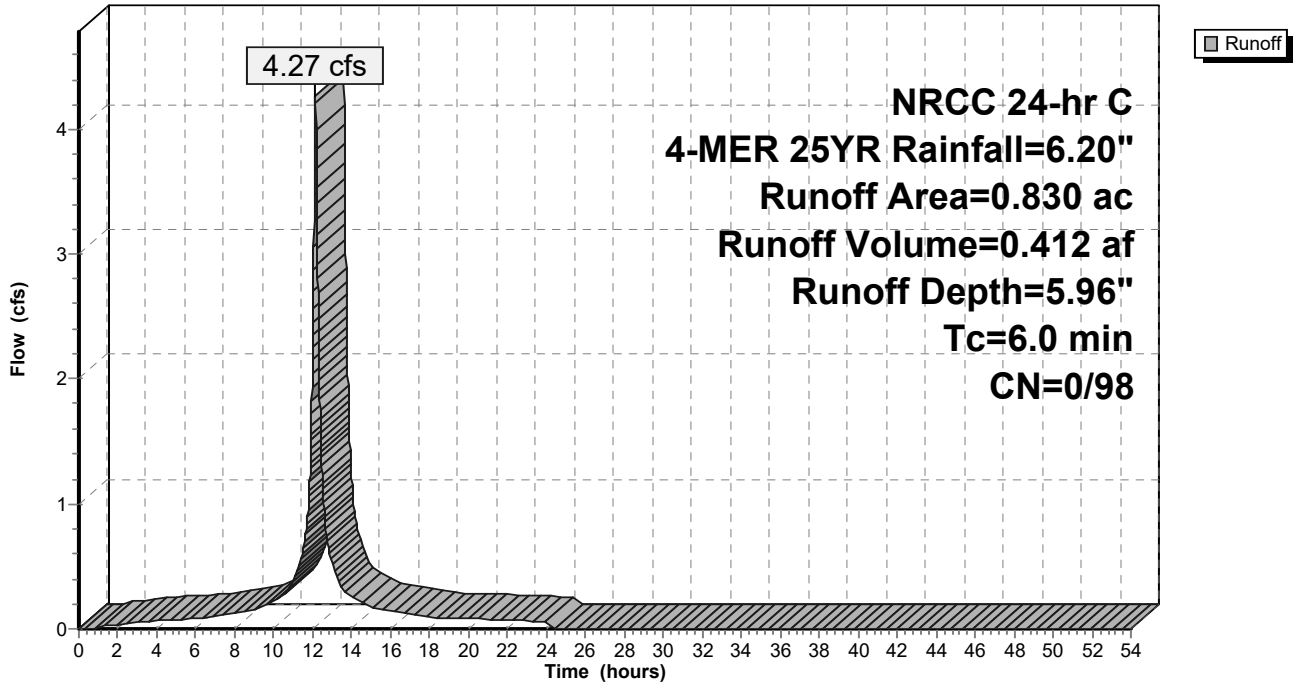
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 4-MER 25YR Rainfall=6.20"

Area (ac)	CN	Description
0.830	98	Roofs, HSG D
0.830	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PB-2: PB-2**

Hydrograph





**Summary for Subcatchment PB-3: PB-3**

Runoff = 0.72 cfs @ 12.14 hrs, Volume= 0.063 af, Depth= 4.43"

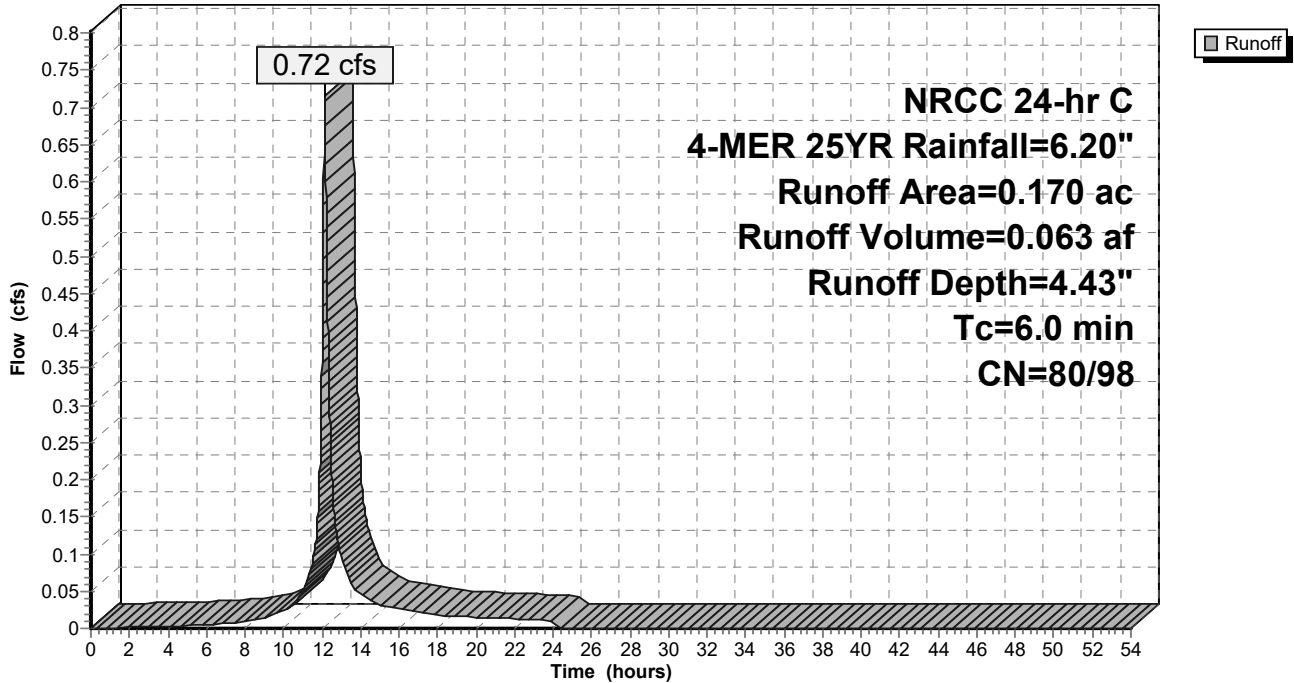
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 4-MER 25YR Rainfall=6.20"

Area (ac)	CN	Description
* 0.040	98	Sidewalks, HSG D
0.130	80	>75% Grass cover, Good, HSG D
0.170	84	Weighted Average
0.130	80	76.47% Pervious Area
0.040	98	23.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PB-3: PB-3**

Hydrograph



**Summary for Subcatchment PB-4: PB-4**

Runoff = 2.57 cfs @ 12.14 hrs, Volume= 0.248 af, Depth= 5.96"

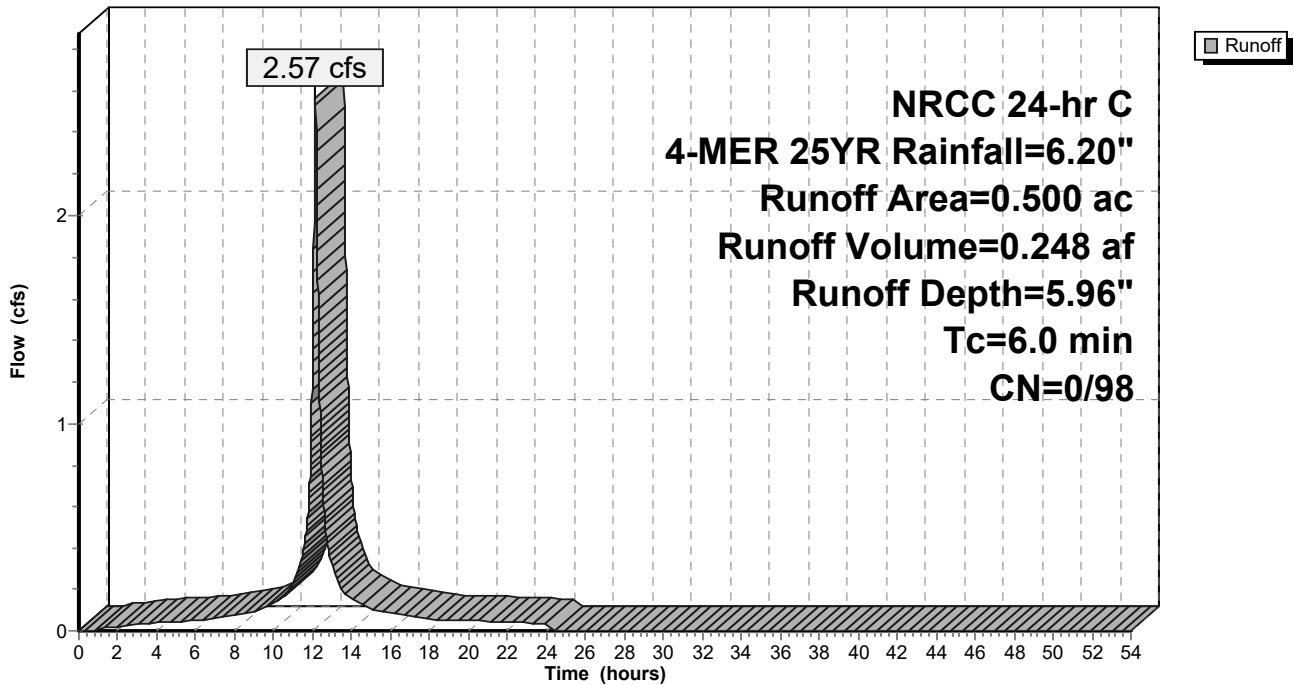
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 4-MER 25YR Rainfall=6.20"

Area (ac)	CN	Description
0.500	98	Paved parking, HSG D
0.500	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PB-4: PB-4**

Hydrograph



**Summary for Subcatchment PB-5: PB-5**

Runoff = 2.73 cfs @ 12.14 hrs, Volume= 0.263 af, Depth= 5.96"

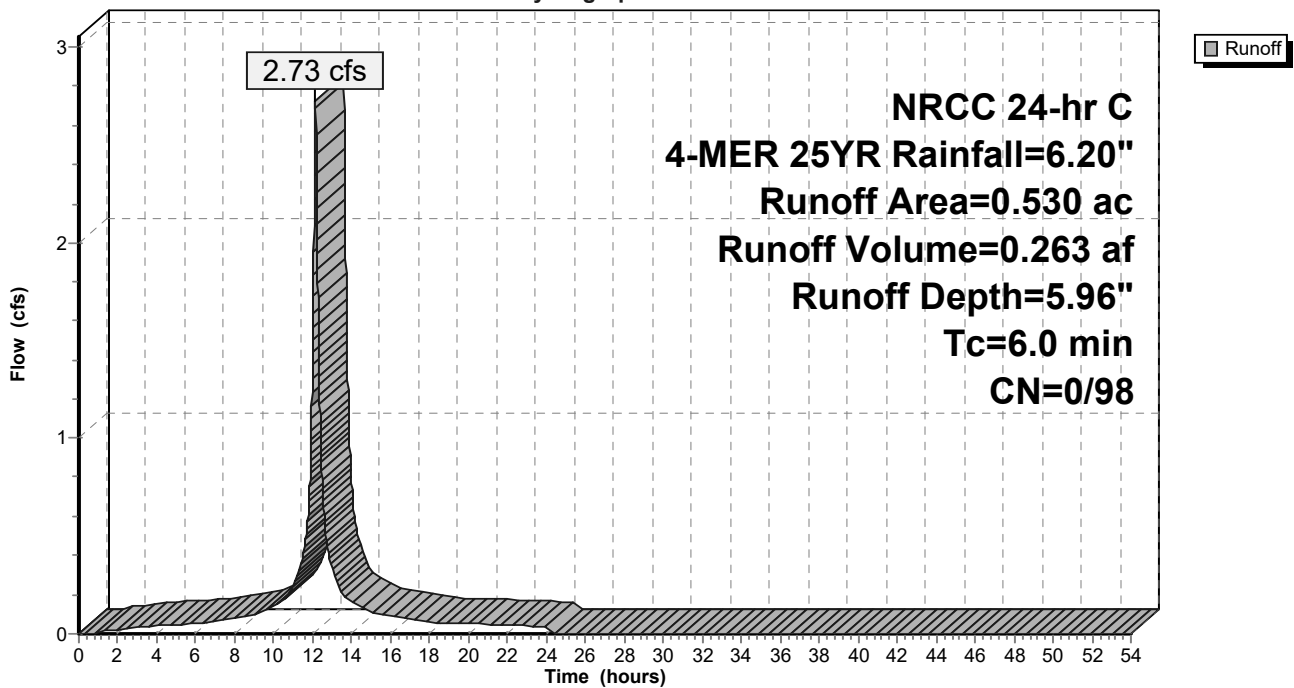
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 4-MER 25YR Rainfall=6.20"

Area (ac)	CN	Description
0.530	98	Roofs, HSG D
0.530	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PB-5: PB-5**

Hydrograph



**Summary for Subcatchment PB-6: PB-6**

Runoff = 1.60 cfs @ 12.14 hrs, Volume= 0.139 af, Depth= 4.42"

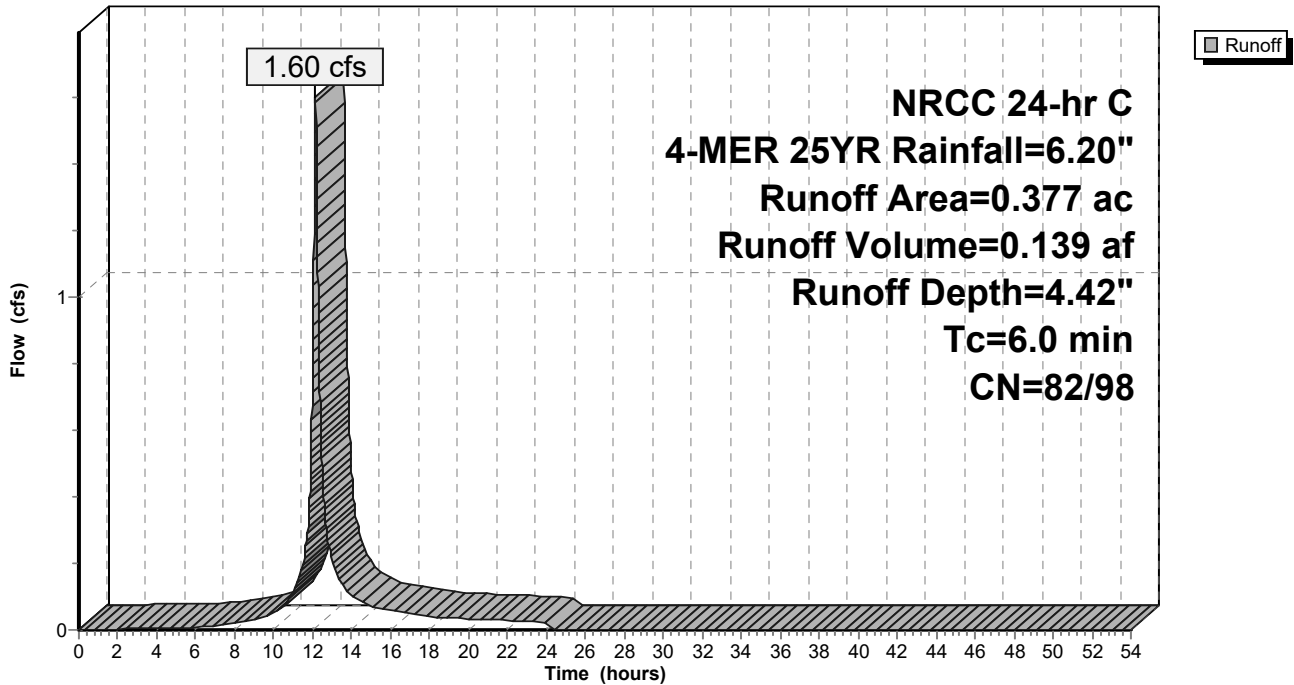
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 4-MER 25YR Rainfall=6.20"

Area (ac)	CN	Description
* 0.052	98	Sidewalks, HSG D
0.295	80	>75% Grass cover, Good, HSG D
0.030	98	Unconnected roofs, HSG D
0.377	84	Weighted Average
0.325	82	86.21% Pervious Area
0.052	98	13.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PB-6: PB-6**

Hydrograph



**Summary for Subcatchment PB-7: PB-7**

Runoff = 0.98 cfs @ 12.14 hrs, Volume= 0.094 af, Depth= 5.96"

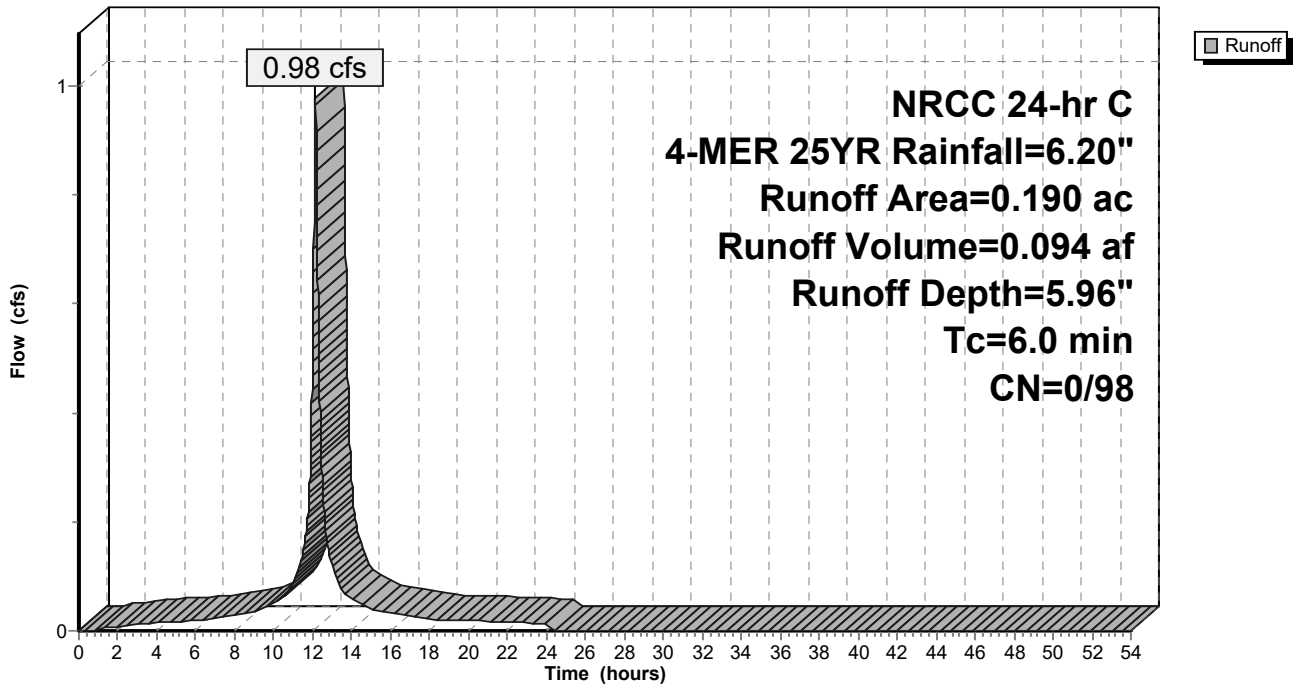
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 4-MER 25YR Rainfall=6.20"

Area (ac)	CN	Description
0.190	98	Roofs, HSG D
0.190	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PB-7: PB-7**

Hydrograph



**Summary for Subcatchment PB-8-ROW: PB-8-ROW**

Runoff = 0.77 cfs @ 12.14 hrs, Volume= 0.075 af, Depth= 5.96"

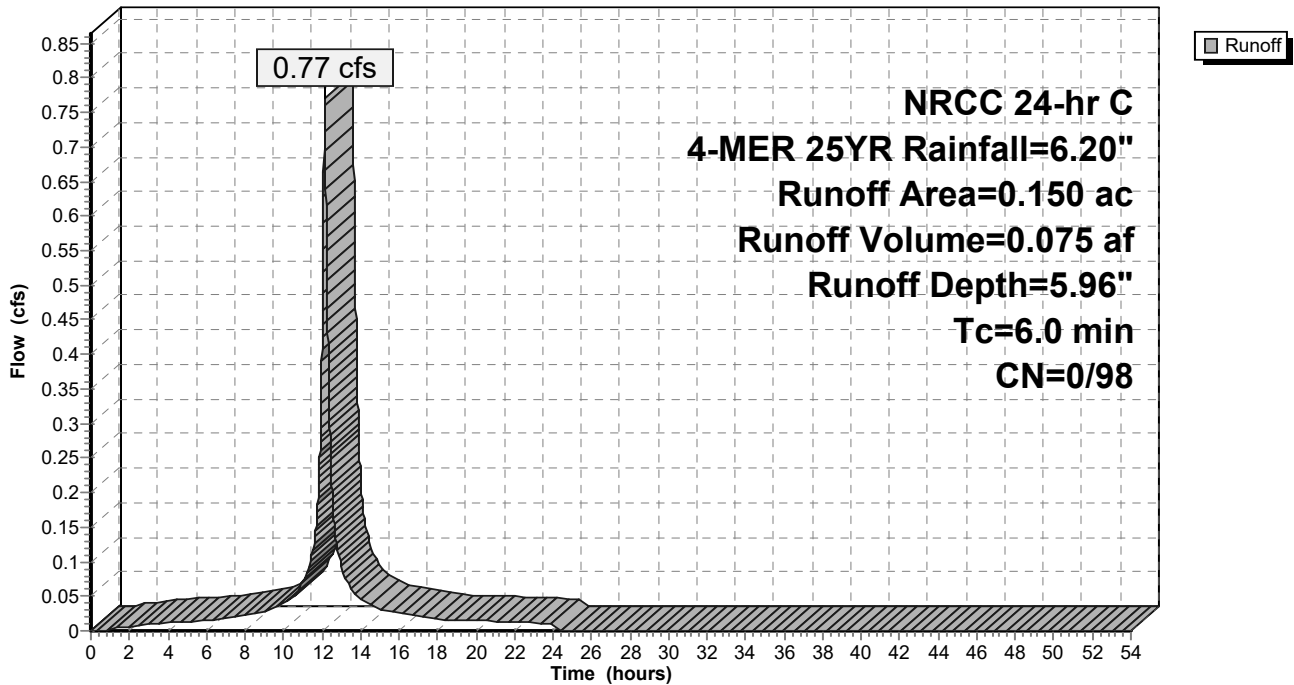
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 4-MER 25YR Rainfall=6.20"

Area (ac)	CN	Description
0.150	98	Paved parking, HSG D
0.150	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PB-8-ROW: PB-8-ROW**

Hydrograph



**Summary for Subcatchment PB-9: PB-9**

Runoff = 3.70 cfs @ 12.14 hrs, Volume= 0.358 af, Depth= 5.96"

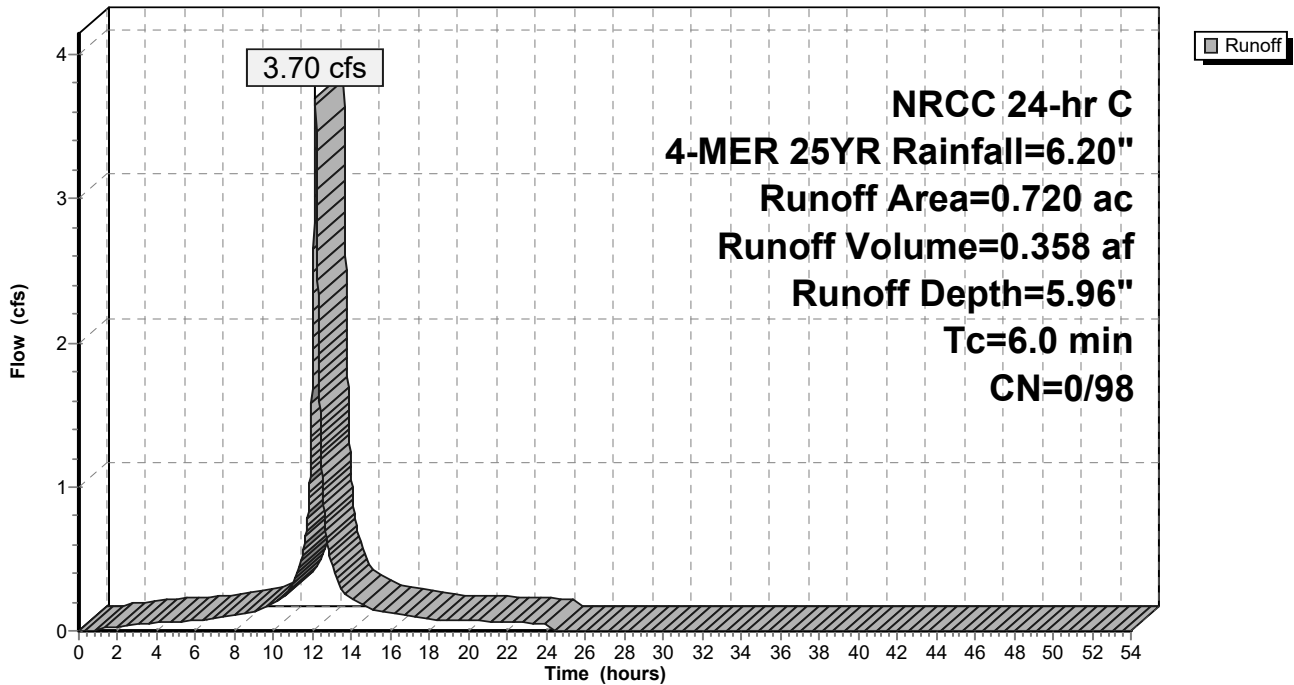
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 4-MER 25YR Rainfall=6.20"

Area (ac)	CN	Description
0.720	98	Paved parking, HSG A
0.720	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PB-9: PB-9**

Hydrograph



### Summary for Reach 24" RCP: 24" RCP

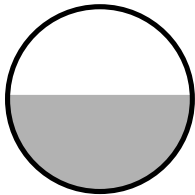
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 3.210 ac, 85.26% Impervious, Inflow Depth = 5.66" for 4-MER 25YR event  
 Inflow = 15.91 cfs @ 12.14 hrs, Volume= 1.514 af  
 Outflow = 15.91 cfs @ 12.14 hrs, Volume= 1.514 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs  
 Max. Velocity= 9.56 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity= 3.43 fps, Avg. Travel Time= 0.2 min

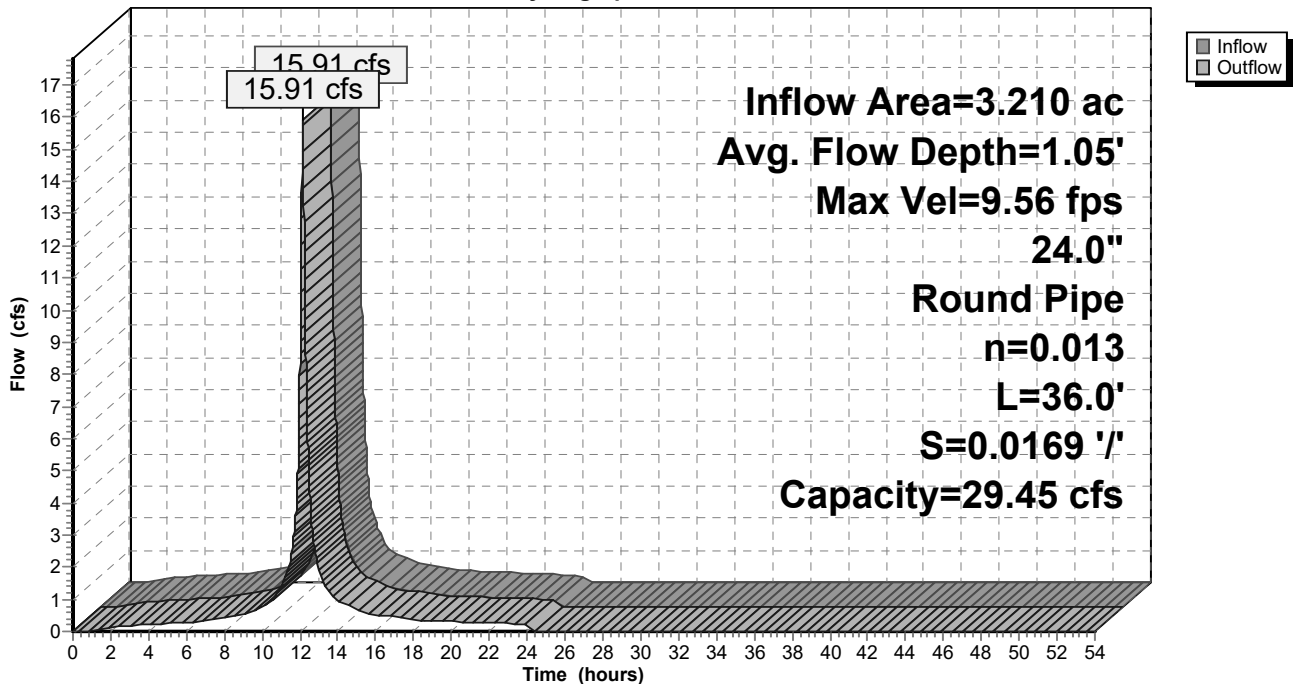
Peak Storage= 60 cf @ 12.14 hrs  
 Average Depth at Peak Storage= 1.05' , Surface Width= 2.00'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 29.45 cfs

24.0" Round Pipe  
 n= 0.013  
 Length= 36.0' Slope= 0.0169 '/'  
 Inlet Invert= 75.22', Outlet Invert= 74.61'



### Reach 24" RCP: 24" RCP

Hydrograph



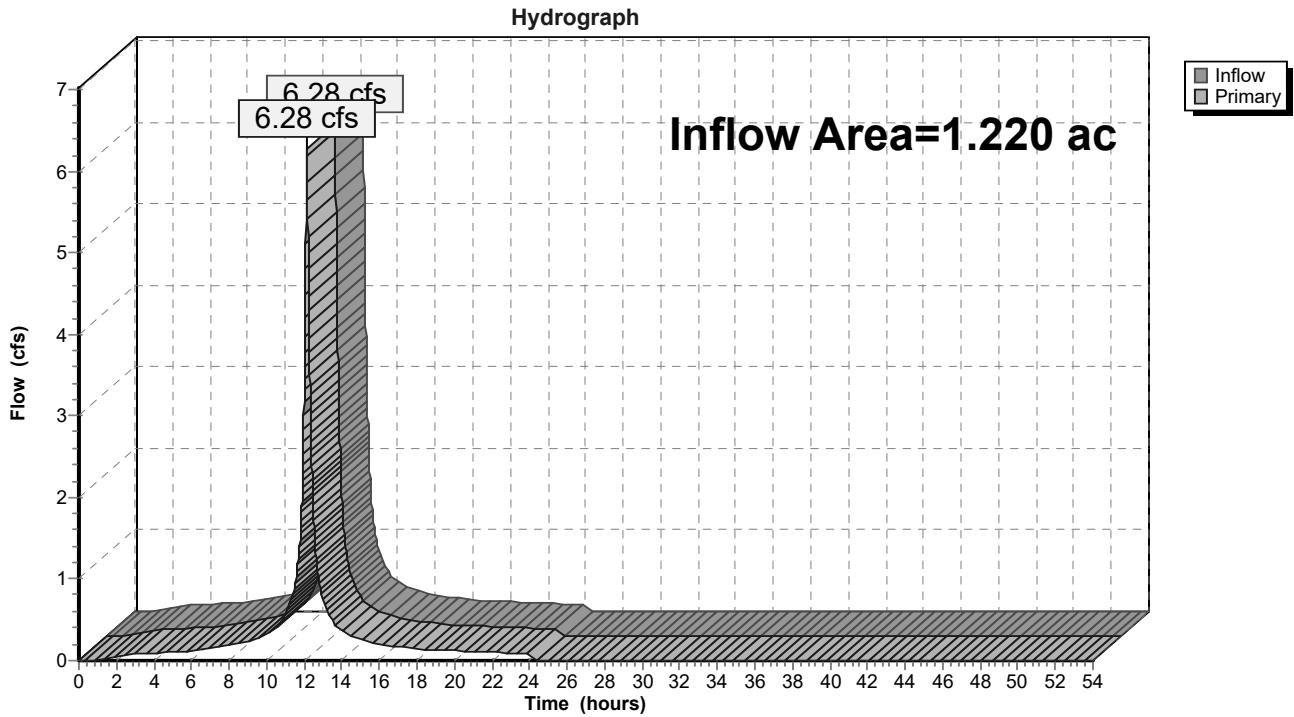


### Summary for Link MTD-B: MTD-B1

Inflow Area = 1.220 ac, 100.00% Impervious, Inflow Depth = 5.96" for 4-MER 25YR event  
Inflow = 6.28 cfs @ 12.14 hrs, Volume= 0.606 af  
Primary = 6.28 cfs @ 12.14 hrs, Volume= 0.606 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link MTD-B: MTD-B1

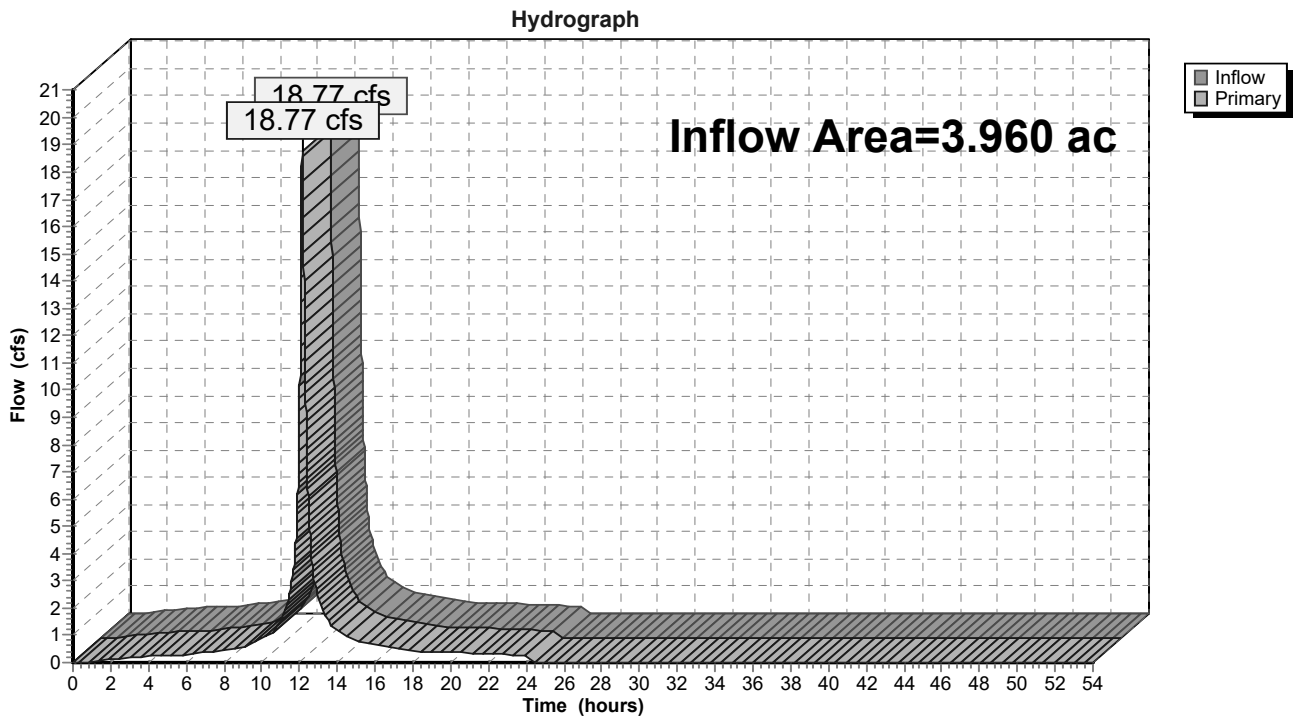


### Summary for Link POA-B1\*: POA-B1\* (ROCKY BROOK CULVERT)

Inflow Area = 3.960 ac, 73.91% Impervious, Inflow Depth = 5.35" for 4-MER 25YR event  
Inflow = 18.77 cfs @ 12.14 hrs, Volume= 1.765 af  
Primary = 18.77 cfs @ 12.14 hrs, Volume= 1.765 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-B1\*: POA-B1\* (ROCKY BROOK CULVERT)



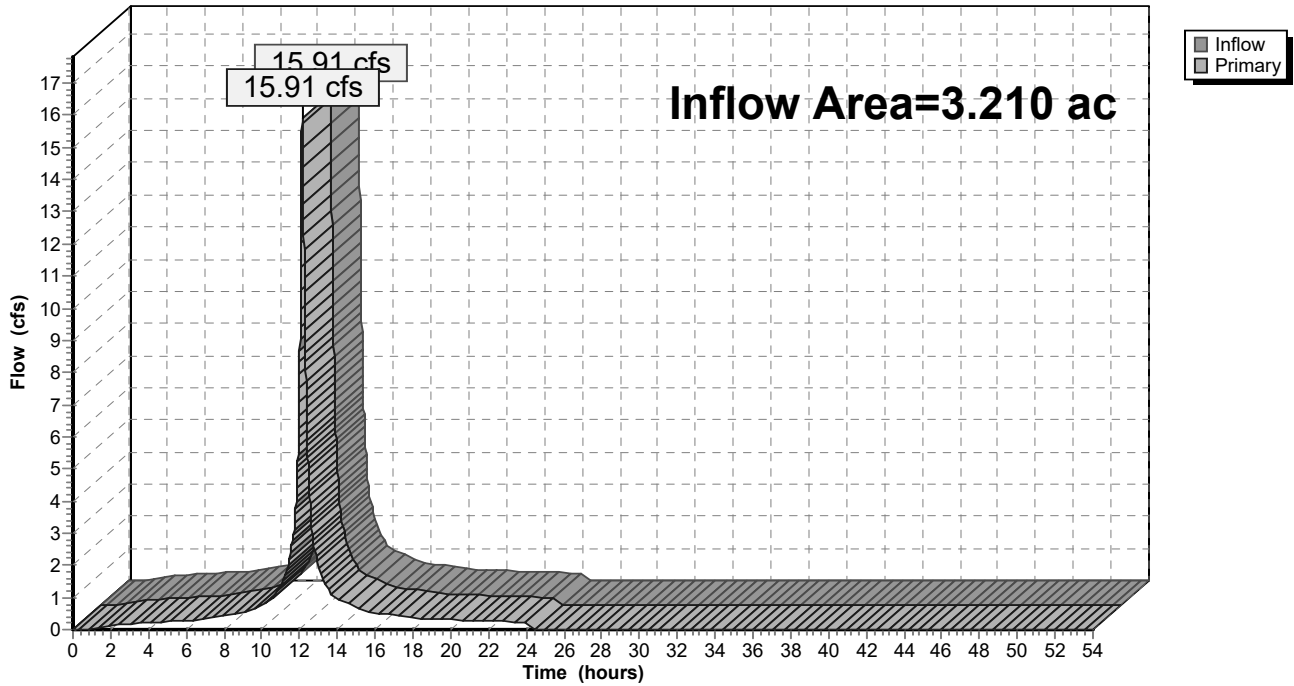
**Summary for Link POA-B1A\*: POA-B1A (ROCKY BROOK 24" HW)**

Inflow Area = 3.210 ac, 85.26% Impervious, Inflow Depth = 5.66" for 4-MER 25YR event  
Inflow = 15.91 cfs @ 12.14 hrs, Volume= 1.514 af  
Primary = 15.91 cfs @ 12.14 hrs, Volume= 1.514 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

**Link POA-B1A\*: POA-B1A (ROCKY BROOK 24" HW)**

Hydrograph

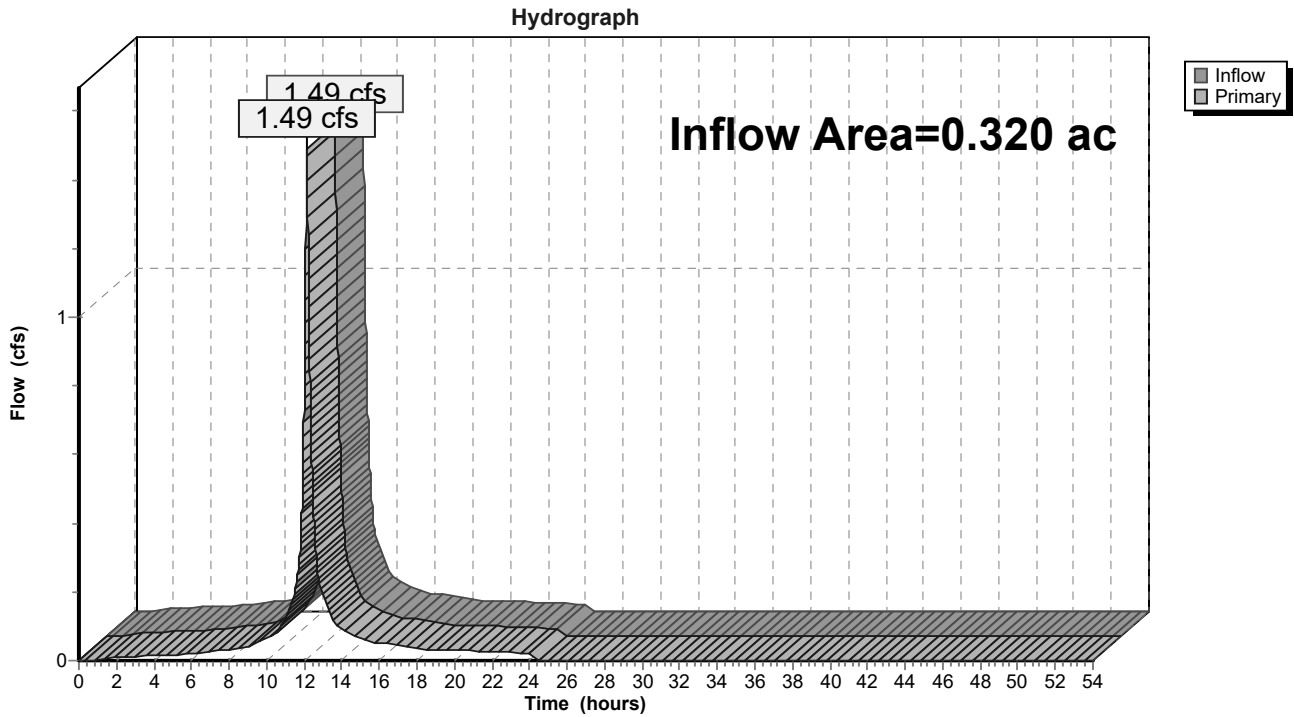


### Summary for Link POA-B2\*: POA-B2 (BANK ST)

Inflow Area = 0.320 ac, 59.37% Impervious, Inflow Depth = 5.15" for 4-MER 25YR event  
Inflow = 1.49 cfs @ 12.14 hrs, Volume= 0.137 af  
Primary = 1.49 cfs @ 12.14 hrs, Volume= 0.137 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-B2\*: POA-B2 (BANK ST)



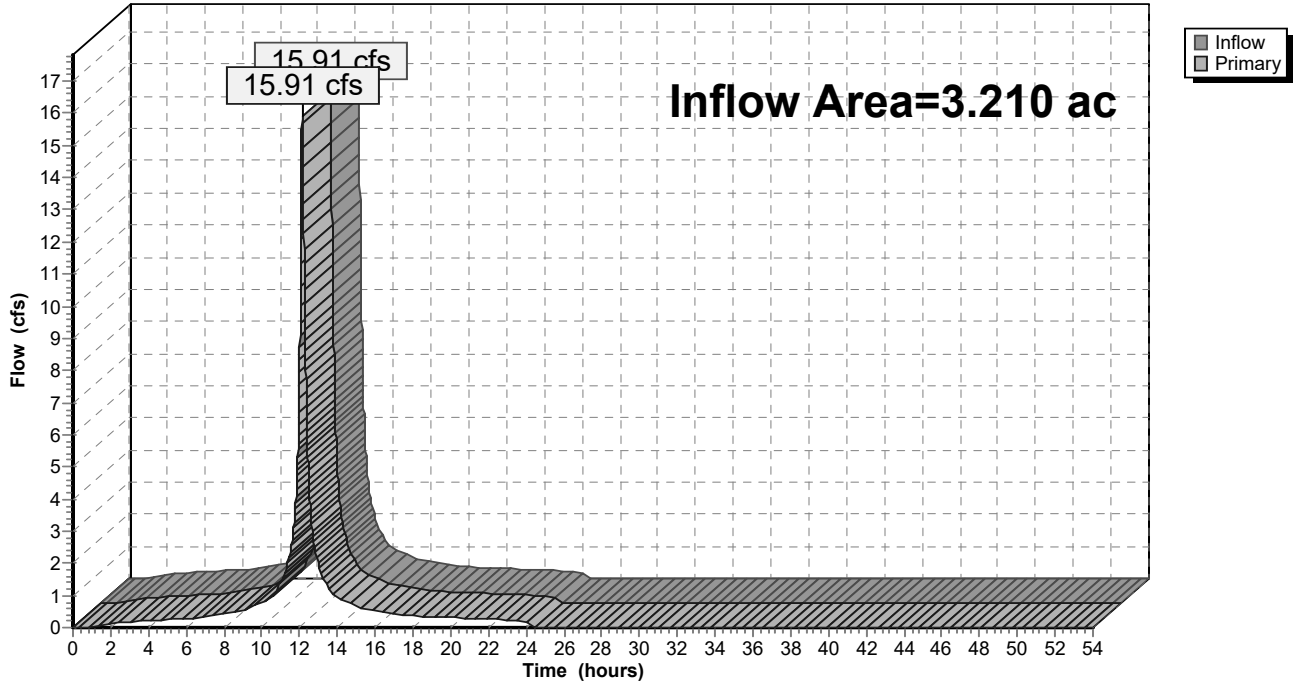
**Summary for Link POA-E4\*: POA-E4\* (24" RCP)**

Inflow Area = 3.210 ac, 85.26% Impervious, Inflow Depth = 5.66" for 4-MER 25YR event  
Inflow = 15.91 cfs @ 12.14 hrs, Volume= 1.514 af  
Primary = 15.91 cfs @ 12.14 hrs, Volume= 1.514 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

**Link POA-E4\*: POA-E4\* (24" RCP)**

Hydrograph

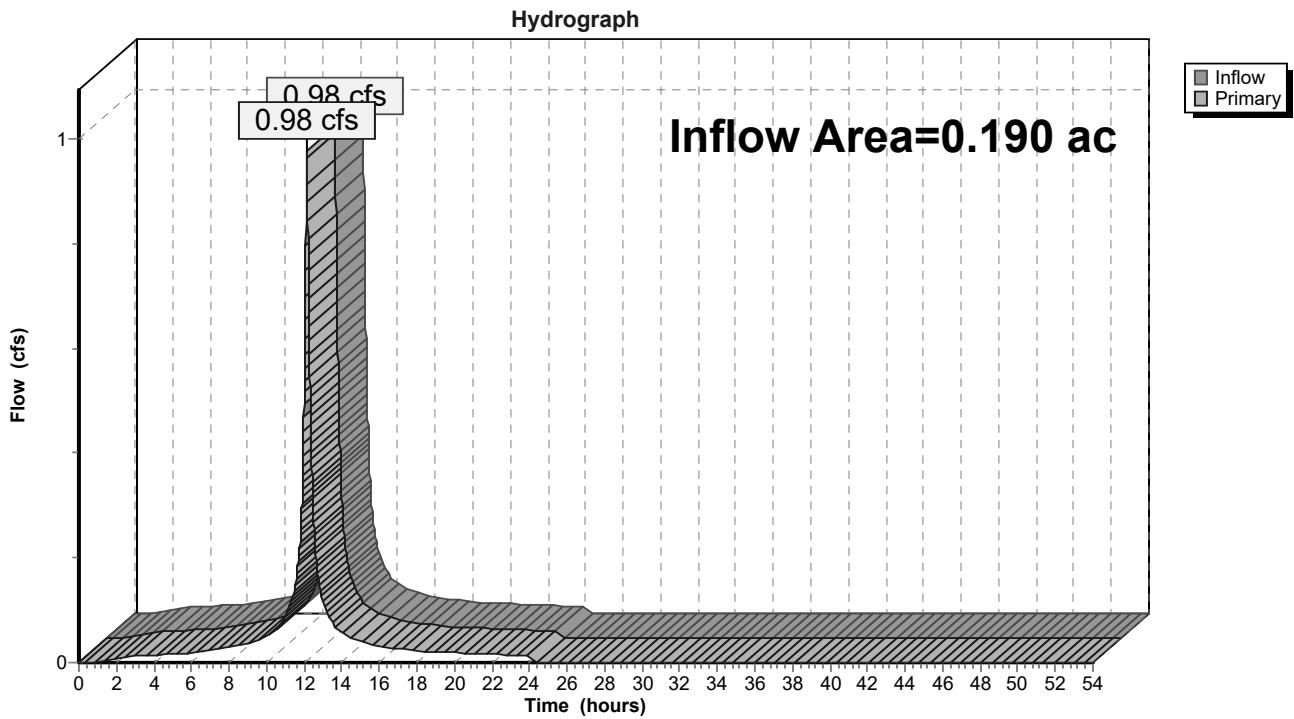


### Summary for Link POA-E5\*: POA-E5 (10" TER\*)

Inflow Area = 0.190 ac, 100.00% Impervious, Inflow Depth = 5.96" for 4-MER 25YR event  
Inflow = 0.98 cfs @ 12.14 hrs, Volume= 0.094 af  
Primary = 0.98 cfs @ 12.14 hrs, Volume= 0.094 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-E5\*: POA-E5 (10" TER\*)



Time span=0.00-54.00 hrs, dt=0.01 hrs, 5401 points  
 Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious  
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

<b>Subcatchment PB-1: PB-1</b>	Runoff Area=0.253 ac 41.50% Impervious Runoff Depth=6.43" Tc=6.0 min CN=74/98 Runoff=1.50 cfs 0.136 af
<b>Subcatchment PB-10: PB-10</b>	Runoff Area=0.560 ac 0.00% Impervious Runoff Depth=5.24" Tc=6.0 min CN=74/0 Runoff=2.91 cfs 0.245 af
<b>Subcatchment PB-2: PB-2</b>	Runoff Area=0.830 ac 100.00% Impervious Runoff Depth=8.11" Tc=6.0 min CN=0/98 Runoff=5.76 cfs 0.561 af
<b>Subcatchment PB-3: PB-3</b>	Runoff Area=0.170 ac 23.53% Impervious Runoff Depth=6.46" Tc=6.0 min CN=80/98 Runoff=1.03 cfs 0.092 af
<b>Subcatchment PB-4: PB-4</b>	Runoff Area=0.500 ac 100.00% Impervious Runoff Depth=8.11" Tc=6.0 min CN=0/98 Runoff=3.47 cfs 0.338 af
<b>Subcatchment PB-5: PB-5</b>	Runoff Area=0.530 ac 100.00% Impervious Runoff Depth=8.11" Tc=6.0 min CN=0/98 Runoff=3.68 cfs 0.358 af
<b>Subcatchment PB-6: PB-6</b>	Runoff Area=0.377 ac 13.79% Impervious Runoff Depth=6.46" Tc=6.0 min CN=82/98 Runoff=2.31 cfs 0.203 af
<b>Subcatchment PB-7: PB-7</b>	Runoff Area=0.190 ac 100.00% Impervious Runoff Depth=8.11" Tc=6.0 min CN=0/98 Runoff=1.32 cfs 0.128 af
<b>Subcatchment PB-8-ROW: PB-8-ROW</b>	Runoff Area=0.150 ac 100.00% Impervious Runoff Depth=8.11" Tc=6.0 min CN=0/98 Runoff=1.04 cfs 0.101 af
<b>Subcatchment PB-9: PB-9</b>	Runoff Area=0.720 ac 100.00% Impervious Runoff Depth=8.11" Tc=6.0 min CN=0/98 Runoff=5.00 cfs 0.487 af
<b>Reach 24" RCP: 24" RCP</b>	Avg. Flow Depth=1.28' Max Vel=10.25 fps Inflow=21.72 cfs 2.082 af 24.0" Round Pipe n=0.013 L=36.0' S=0.0169 '/' Capacity=29.45 cfs Outflow=21.72 cfs 2.082 af
<b>Link MTD-B: MTD-B1</b>	Inflow=8.47 cfs 0.825 af Primary=8.47 cfs 0.825 af
<b>Link POA-B1*: POA-B1* (ROCKY BROOK CULVERT)</b>	Inflow=25.95 cfs 2.455 af Primary=25.95 cfs 2.455 af
<b>Link POA-B1A*: POA-B1A (ROCKY BROOK 24" HW)</b>	Inflow=21.72 cfs 2.082 af Primary=21.72 cfs 2.082 af
<b>Link POA-B2*: POA-B2 (BANK ST)</b>	Inflow=2.07 cfs 0.193 af Primary=2.07 cfs 0.193 af
<b>Link POA-E4*: POA-E4* (24" RCP)</b>	Inflow=21.72 cfs 2.082 af Primary=21.72 cfs 2.082 af

**200811\_Model**

*NRCC 24-hr C 5-MER 100YR Rainfall=8.35"*

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**Link POA-E5\*: POA-E5 (10" TER\*)**

Inflow=1.32 cfs 0.128 af  
Primary=1.32 cfs 0.128 af

**Total Runoff Area = 4.280 ac   Runoff Volume = 2.648 af   Average Runoff Depth = 7.42"**  
**27.17% Pervious = 1.163 ac   72.83% Impervious = 3.117 ac**



**Summary for Subcatchment PB-1: PB-1**

Runoff = 1.50 cfs @ 12.14 hrs, Volume= 0.136 af, Depth= 6.43"

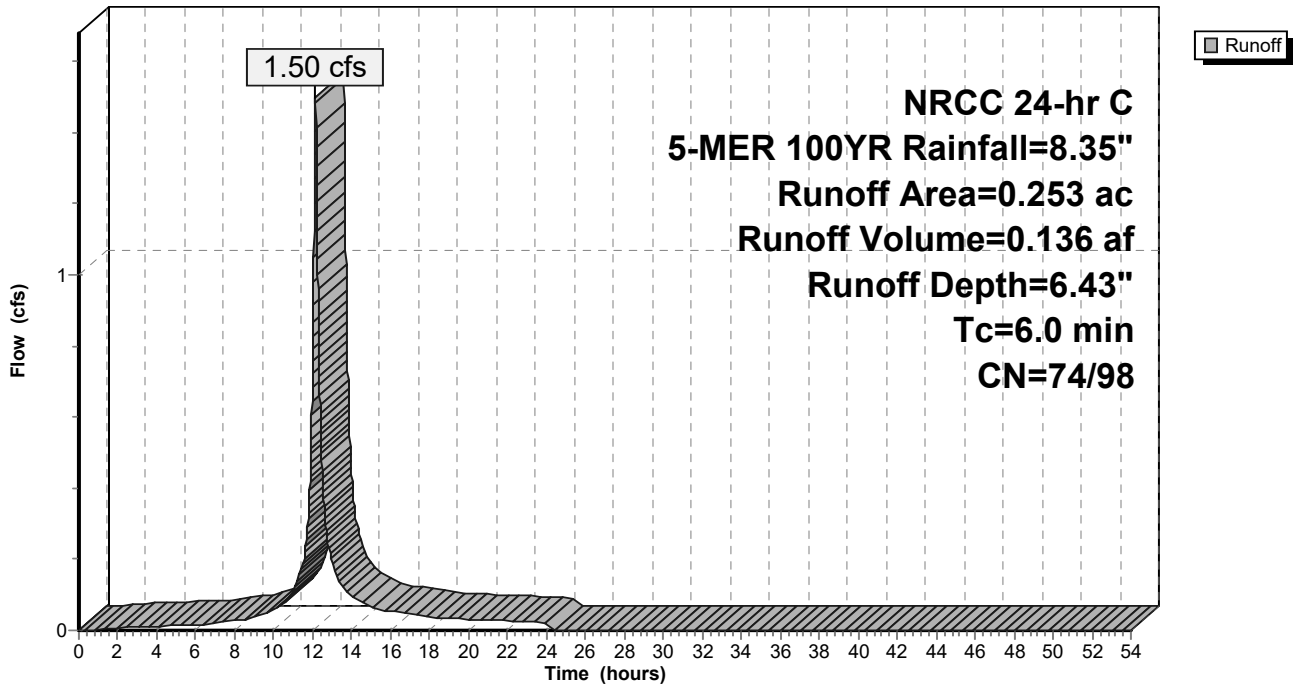
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 5-MER 100YR Rainfall=8.35"

Area (ac)	CN	Description
* 0.105	98	Pool/Patio
0.148	74	>75% Grass cover, Good, HSG C
0.253	84	Weighted Average
0.148	74	58.50% Pervious Area
0.105	98	41.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PB-1: PB-1**

Hydrograph



**Summary for Subcatchment PB-10: PB-10**

Runoff = 2.91 cfs @ 12.14 hrs, Volume= 0.245 af, Depth= 5.24"

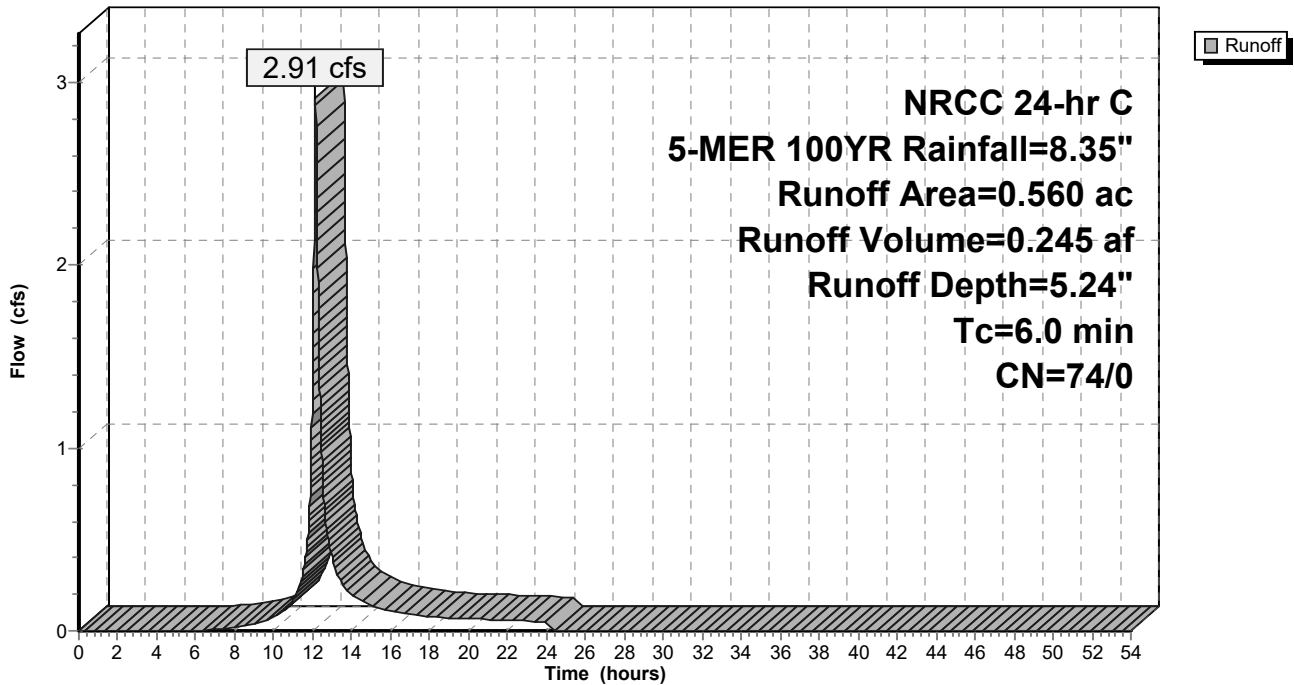
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 5-MER 100YR Rainfall=8.35"

Area (ac)	CN	Description
0.560	74	>75% Grass cover, Good, HSG C
0.560	74	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PB-10: PB-10**

Hydrograph



**Summary for Subcatchment PB-2: PB-2**

Runoff = 5.76 cfs @ 12.14 hrs, Volume= 0.561 af, Depth= 8.11"

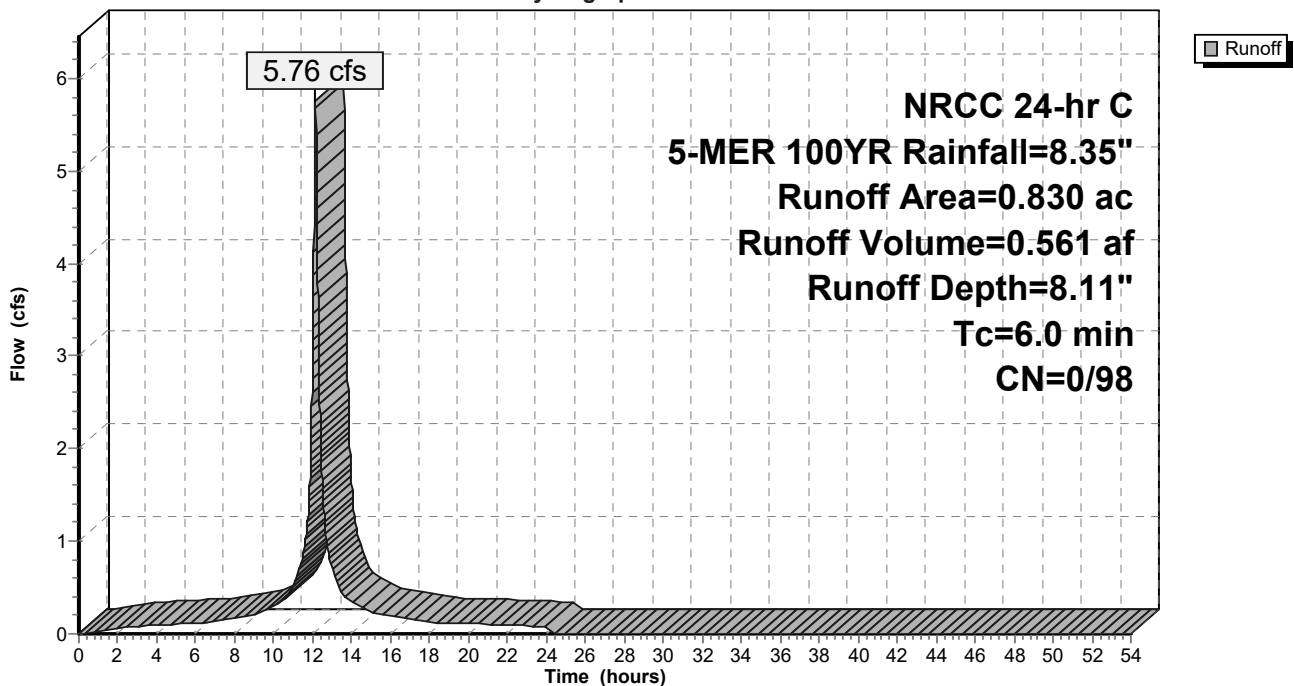
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 5-MER 100YR Rainfall=8.35"

Area (ac)	CN	Description
0.830	98	Roofs, HSG D
0.830	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PB-2: PB-2**

Hydrograph



**Summary for Subcatchment PB-3: PB-3**

Runoff = 1.03 cfs @ 12.14 hrs, Volume= 0.092 af, Depth= 6.46"

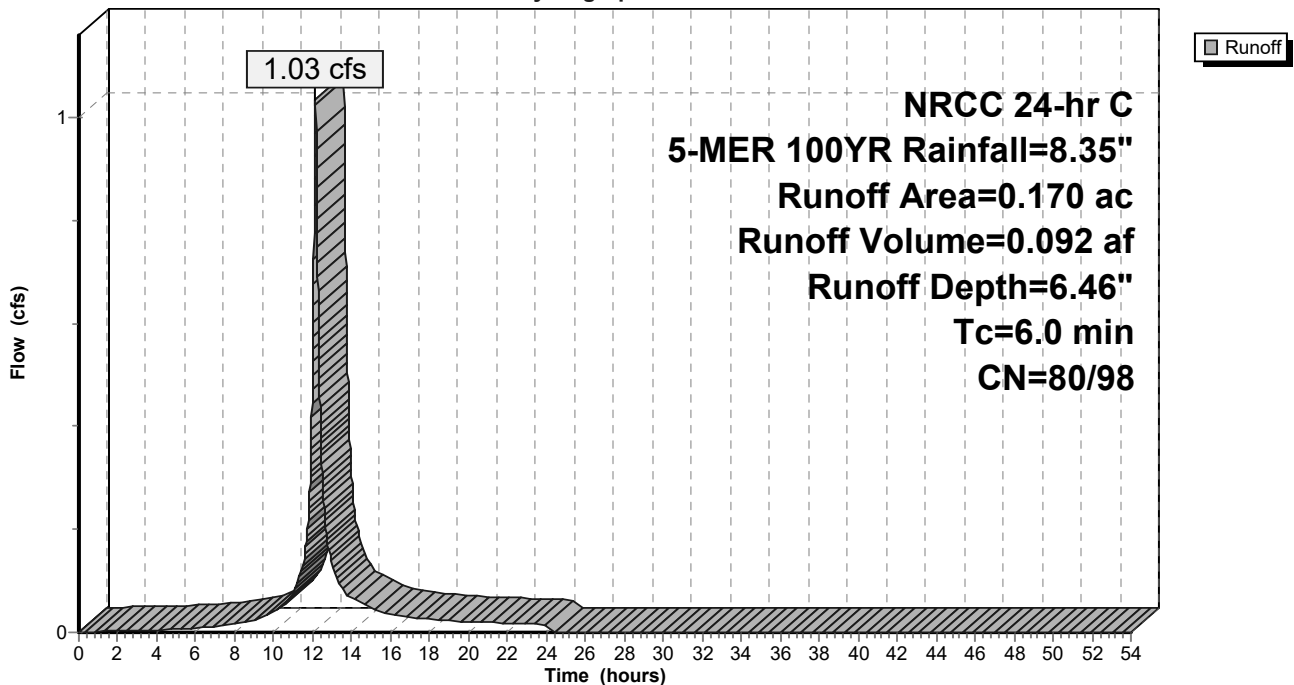
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 5-MER 100YR Rainfall=8.35"

Area (ac)	CN	Description
* 0.040	98	Sidewalks, HSG D
0.130	80	>75% Grass cover, Good, HSG D
0.170	84	Weighted Average
0.130	80	76.47% Pervious Area
0.040	98	23.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PB-3: PB-3**

Hydrograph



### Summary for Subcatchment PB-4: PB-4

Runoff = 3.47 cfs @ 12.14 hrs, Volume= 0.338 af, Depth= 8.11"

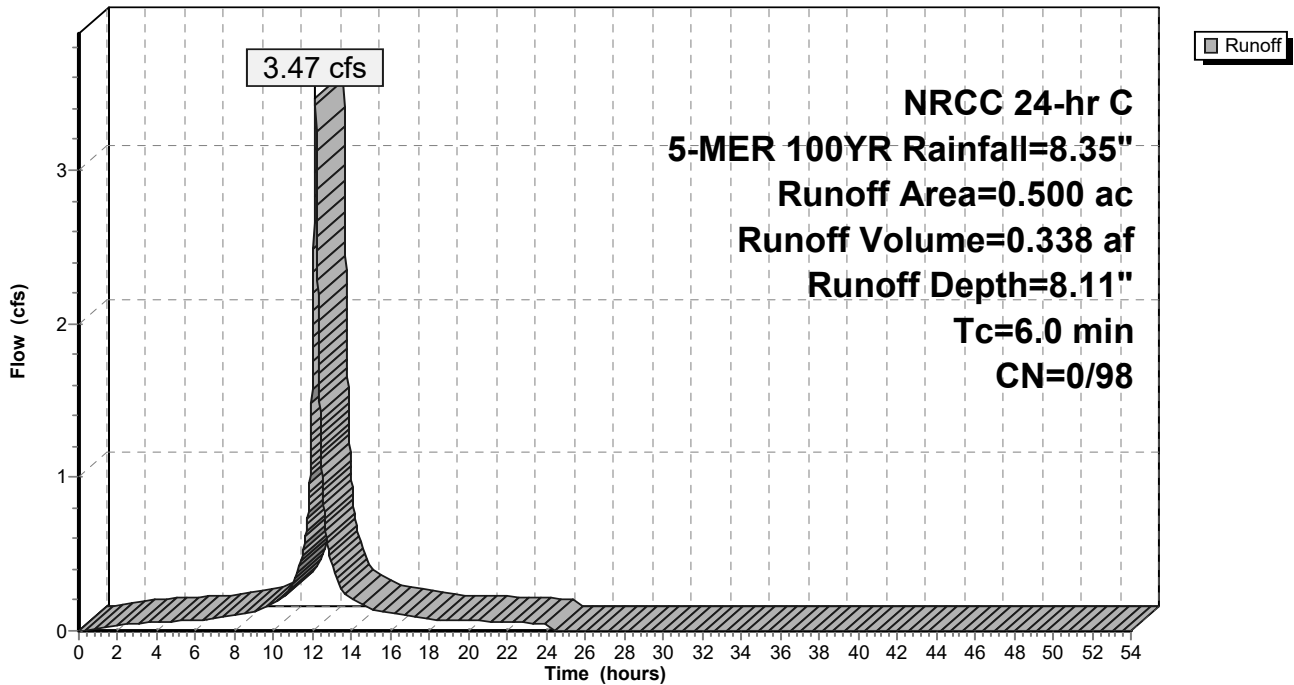
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 5-MER 100YR Rainfall=8.35"

Area (ac)	CN	Description
0.500	98	Paved parking, HSG D
0.500	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

### Subcatchment PB-4: PB-4

Hydrograph



**Summary for Subcatchment PB-5: PB-5**

Runoff = 3.68 cfs @ 12.14 hrs, Volume= 0.358 af, Depth= 8.11"

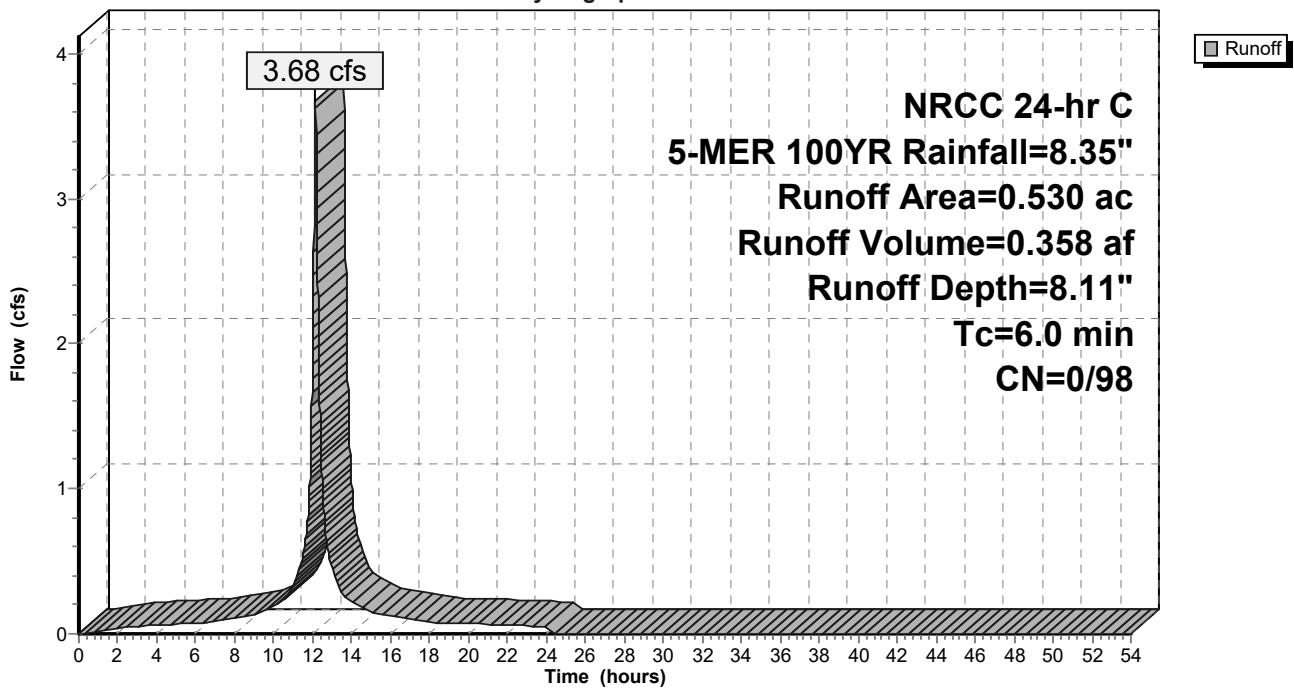
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 5-MER 100YR Rainfall=8.35"

Area (ac)	CN	Description
0.530	98	Roofs, HSG D
0.530	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PB-5: PB-5**

Hydrograph



**Summary for Subcatchment PB-6: PB-6**

Runoff = 2.31 cfs @ 12.14 hrs, Volume= 0.203 af, Depth= 6.46"

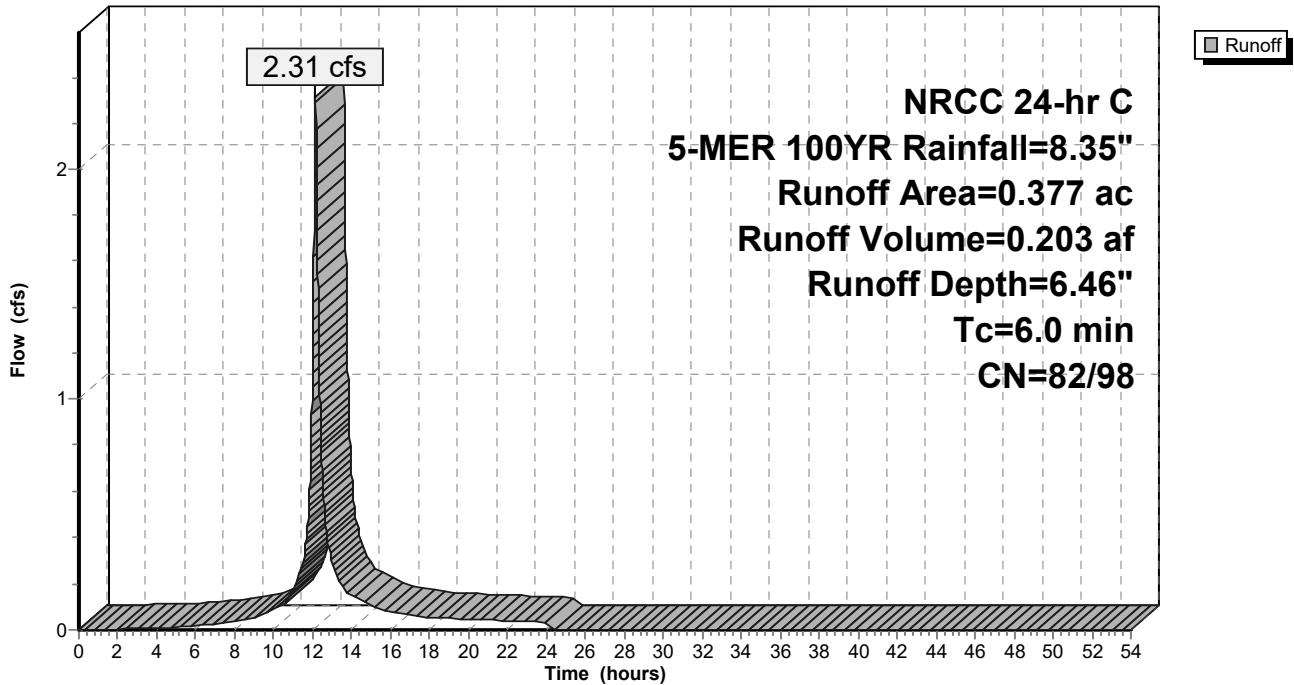
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 5-MER 100YR Rainfall=8.35"

Area (ac)	CN	Description
* 0.052	98	Sidewalks, HSG D
0.295	80	>75% Grass cover, Good, HSG D
0.030	98	Unconnected roofs, HSG D
0.377	84	Weighted Average
0.325	82	86.21% Pervious Area
0.052	98	13.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PB-6: PB-6**

Hydrograph



### Summary for Subcatchment PB-7: PB-7

Runoff = 1.32 cfs @ 12.14 hrs, Volume= 0.128 af, Depth= 8.11"

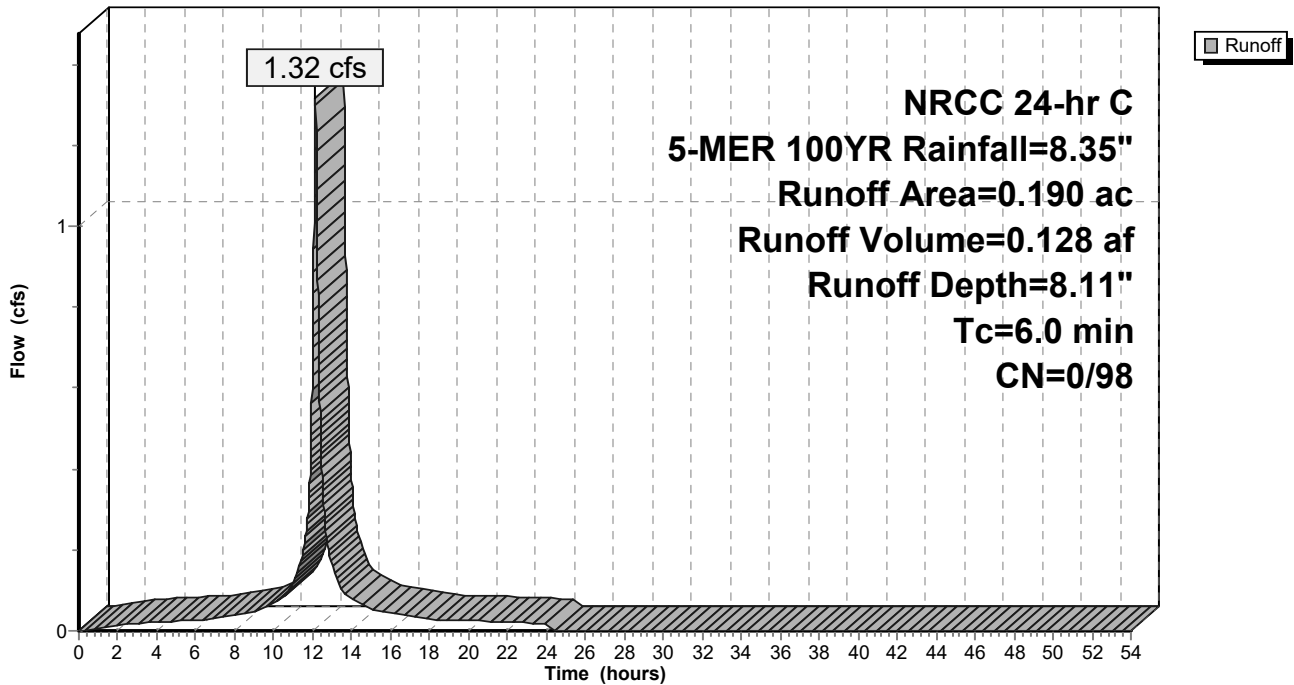
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 5-MER 100YR Rainfall=8.35"

Area (ac)	CN	Description
0.190	98	Roofs, HSG D
0.190	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

### Subcatchment PB-7: PB-7

Hydrograph





**Summary for Subcatchment PB-8-ROW: PB-8-ROW**

Runoff = 1.04 cfs @ 12.14 hrs, Volume= 0.101 af, Depth= 8.11"

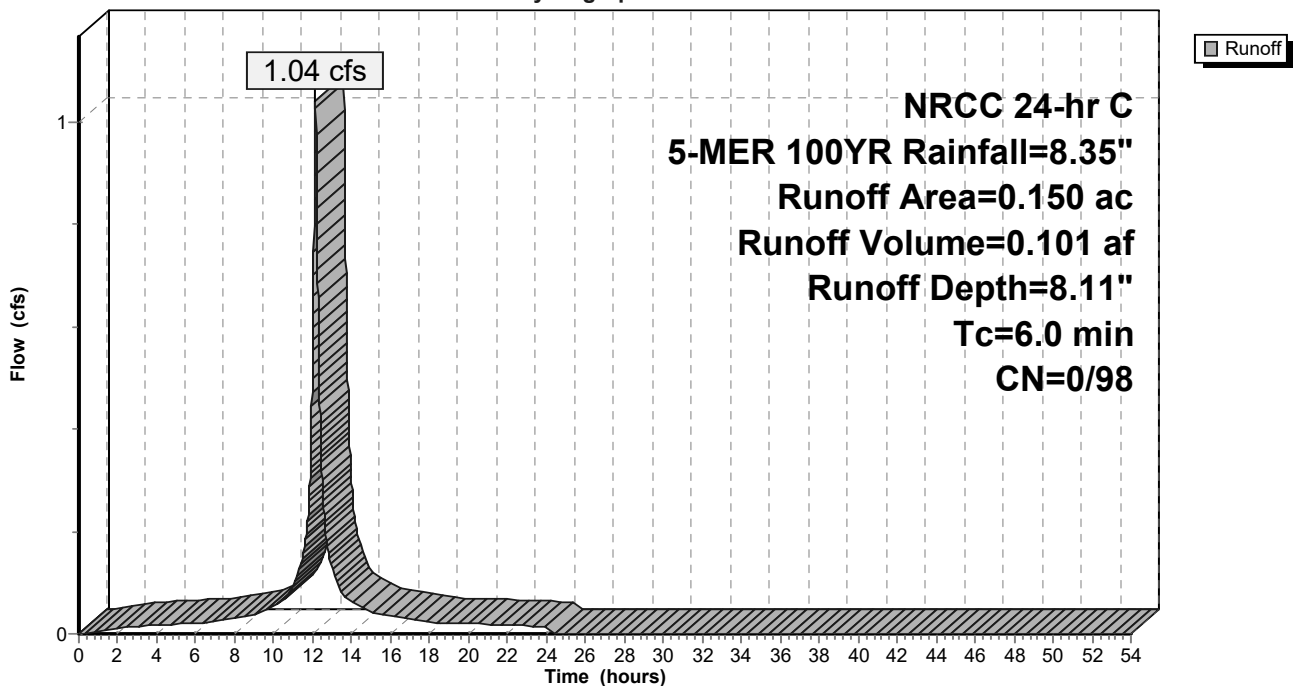
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 5-MER 100YR Rainfall=8.35"

Area (ac)	CN	Description
0.150	98	Paved parking, HSG D
0.150	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PB-8-ROW: PB-8-ROW**

Hydrograph



**Summary for Subcatchment PB-9: PB-9**

Runoff = 5.00 cfs @ 12.14 hrs, Volume= 0.487 af, Depth= 8.11"

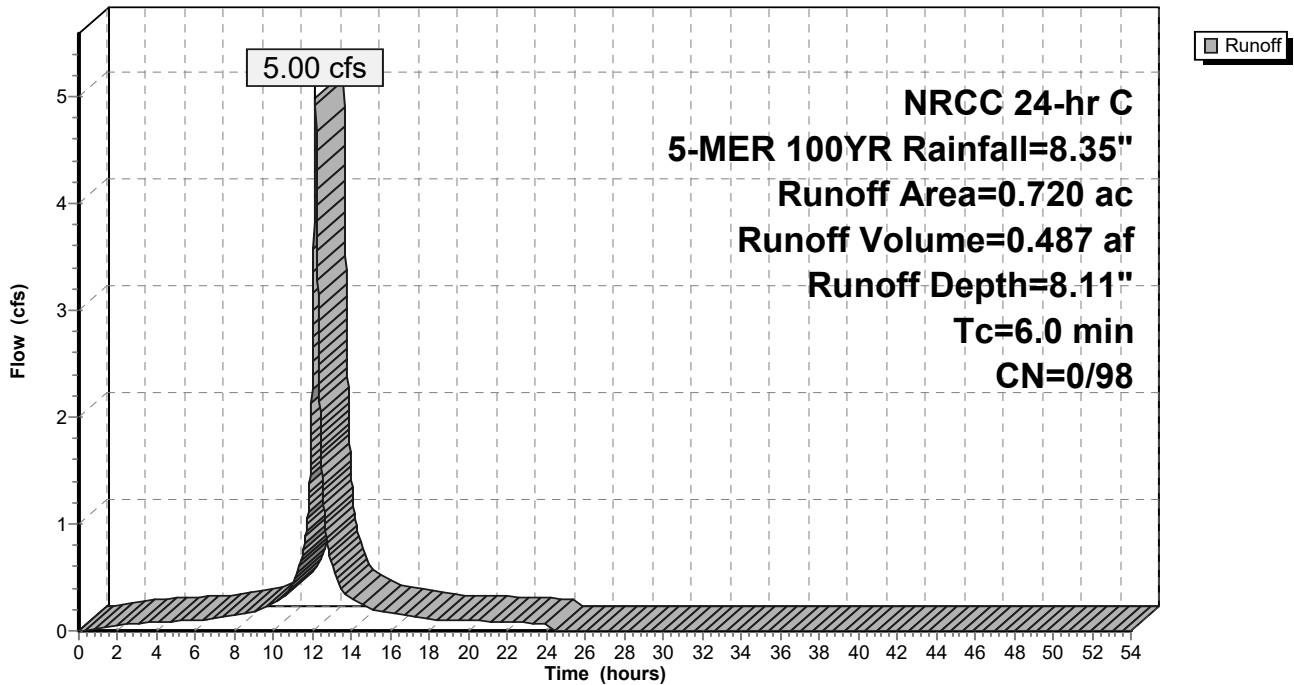
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 5-MER 100YR Rainfall=8.35"

Area (ac)	CN	Description
0.720	98	Paved parking, HSG A
0.720	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PB-9: PB-9**

Hydrograph



### Summary for Reach 24" RCP: 24" RCP

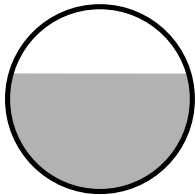
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 3.210 ac, 85.26% Impervious, Inflow Depth = 7.78" for 5-MER 100YR event  
 Inflow = 21.72 cfs @ 12.14 hrs, Volume= 2.082 af  
 Outflow = 21.72 cfs @ 12.14 hrs, Volume= 2.082 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs  
 Max. Velocity= 10.25 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 3.77 fps, Avg. Travel Time= 0.2 min

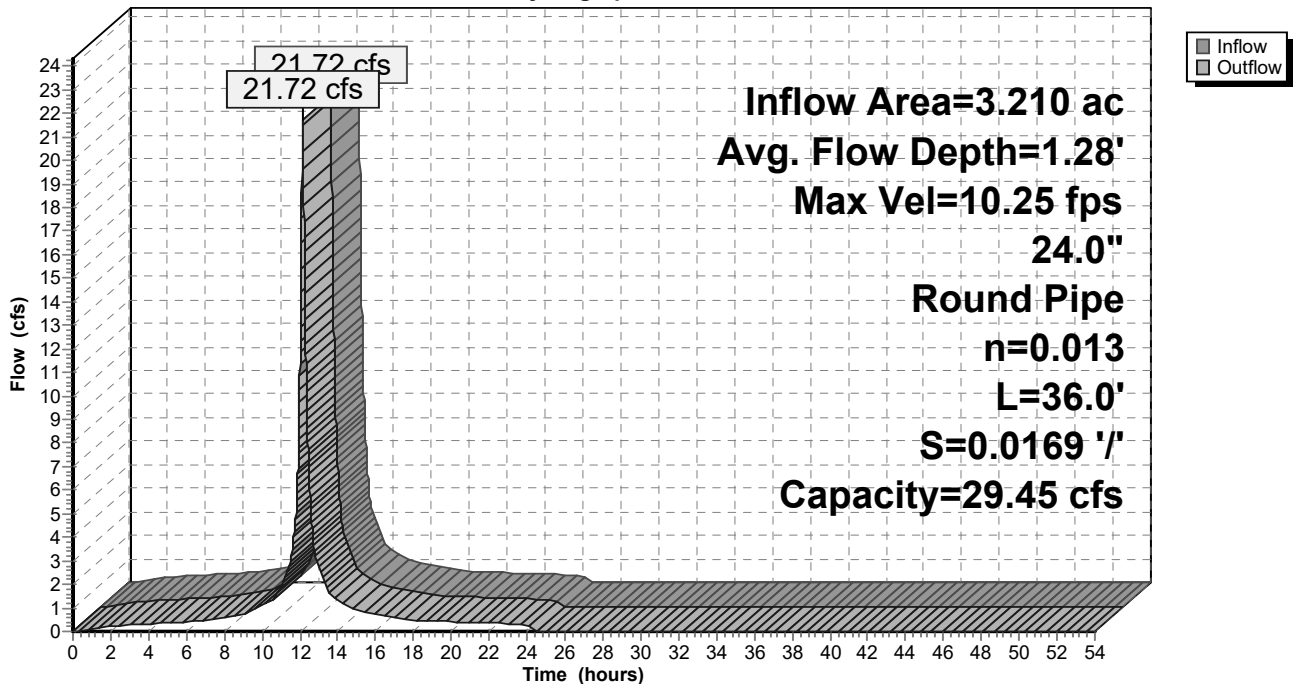
Peak Storage= 76 cf @ 12.14 hrs  
 Average Depth at Peak Storage= 1.28' , Surface Width= 1.92'  
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 29.45 cfs

24.0" Round Pipe  
 n= 0.013  
 Length= 36.0' Slope= 0.0169 '/'  
 Inlet Invert= 75.22', Outlet Invert= 74.61'



### Reach 24" RCP: 24" RCP

Hydrograph



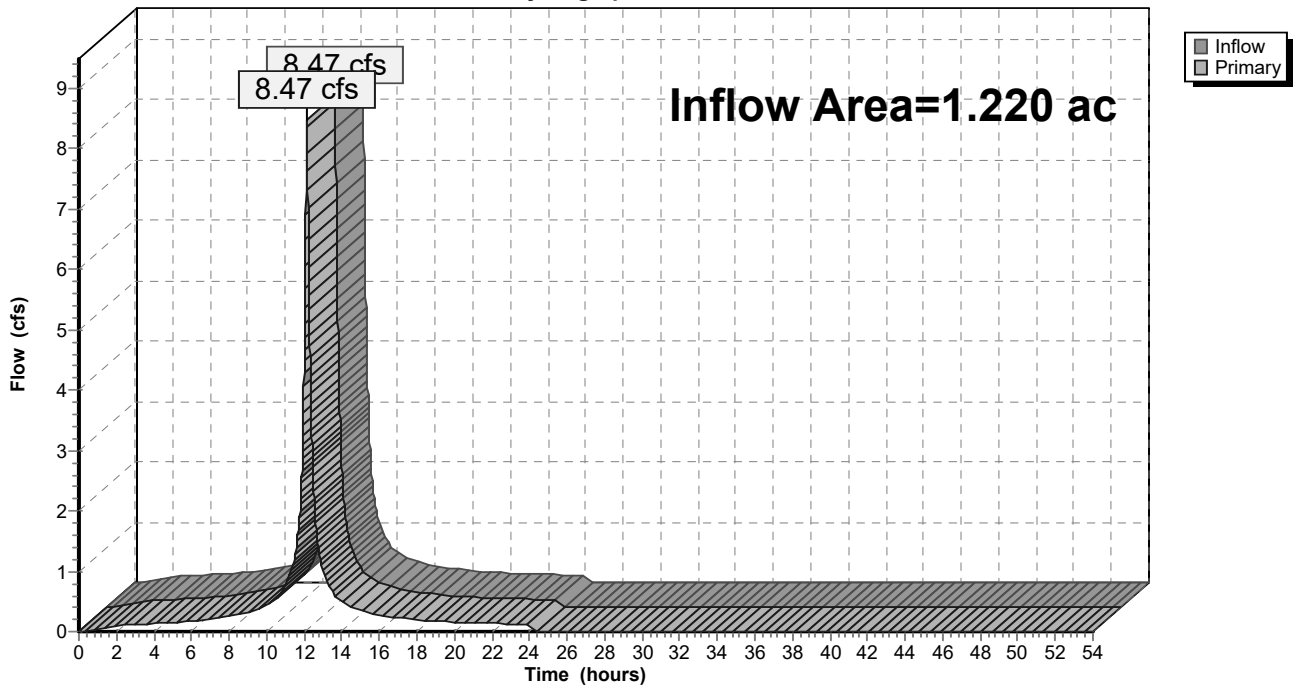
### Summary for Link MTD-B: MTD-B1

Inflow Area = 1.220 ac, 100.00% Impervious, Inflow Depth = 8.11" for 5-MER 100YR event  
Inflow = 8.47 cfs @ 12.14 hrs, Volume= 0.825 af  
Primary = 8.47 cfs @ 12.14 hrs, Volume= 0.825 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link MTD-B: MTD-B1

Hydrograph



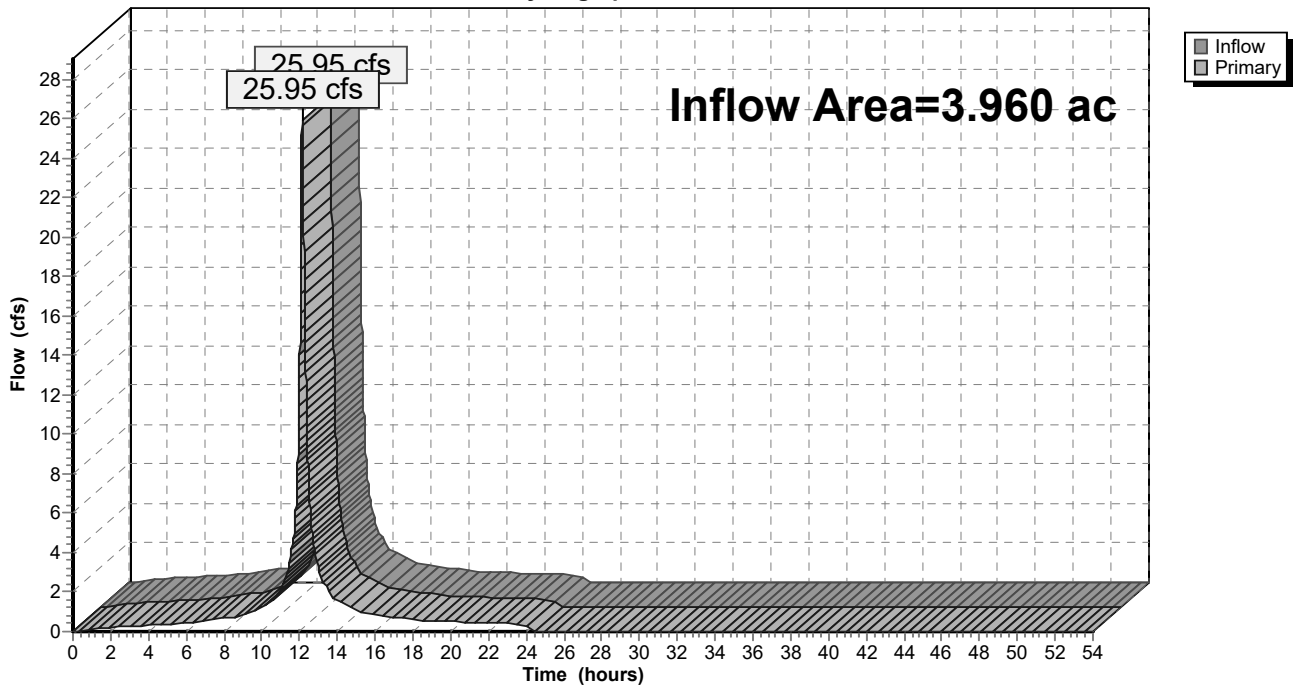
### Summary for Link POA-B1\*: POA-B1\* (ROCKY BROOK CULVERT)

Inflow Area = 3.960 ac, 73.91% Impervious, Inflow Depth = 7.44" for 5-MER 100YR event  
Inflow = 25.95 cfs @ 12.14 hrs, Volume= 2.455 af  
Primary = 25.95 cfs @ 12.14 hrs, Volume= 2.455 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-B1\*: POA-B1\* (ROCKY BROOK CULVERT)

Hydrograph



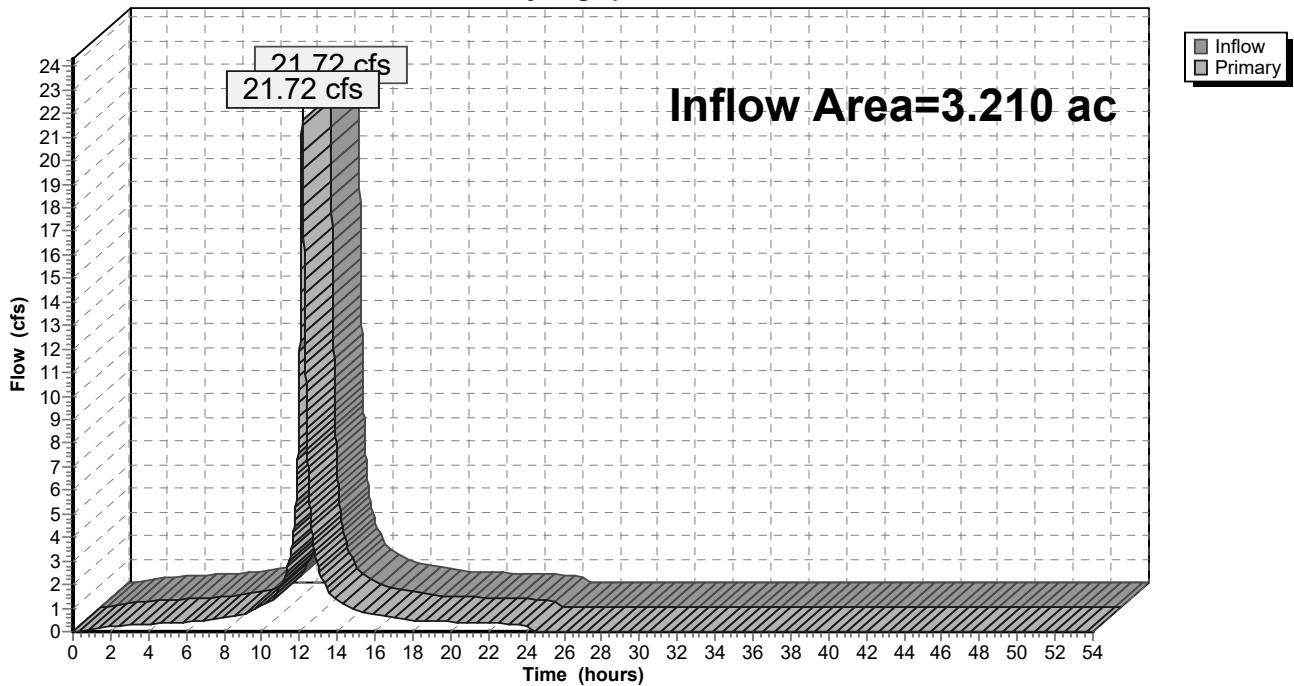
### Summary for Link POA-B1A\*: POA-B1A (ROCKY BROOK 24" HW)

Inflow Area = 3.210 ac, 85.26% Impervious, Inflow Depth = 7.78" for 5-MER 100YR event  
Inflow = 21.72 cfs @ 12.14 hrs, Volume= 2.082 af  
Primary = 21.72 cfs @ 12.14 hrs, Volume= 2.082 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-B1A\*: POA-B1A (ROCKY BROOK 24" HW)

Hydrograph

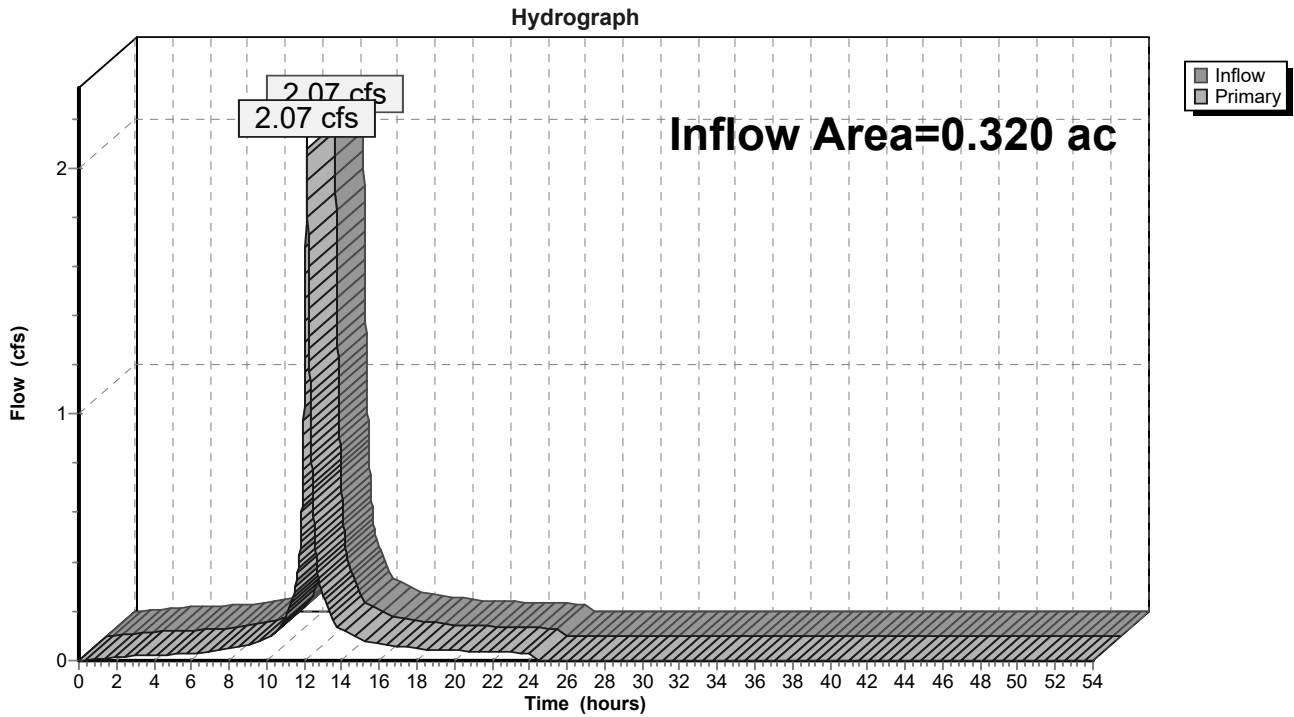


### Summary for Link POA-B2\*: POA-B2 (BANK ST)

Inflow Area = 0.320 ac, 59.37% Impervious, Inflow Depth = 7.23" for 5-MER 100YR event  
Inflow = 2.07 cfs @ 12.14 hrs, Volume= 0.193 af  
Primary = 2.07 cfs @ 12.14 hrs, Volume= 0.193 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-B2\*: POA-B2 (BANK ST)



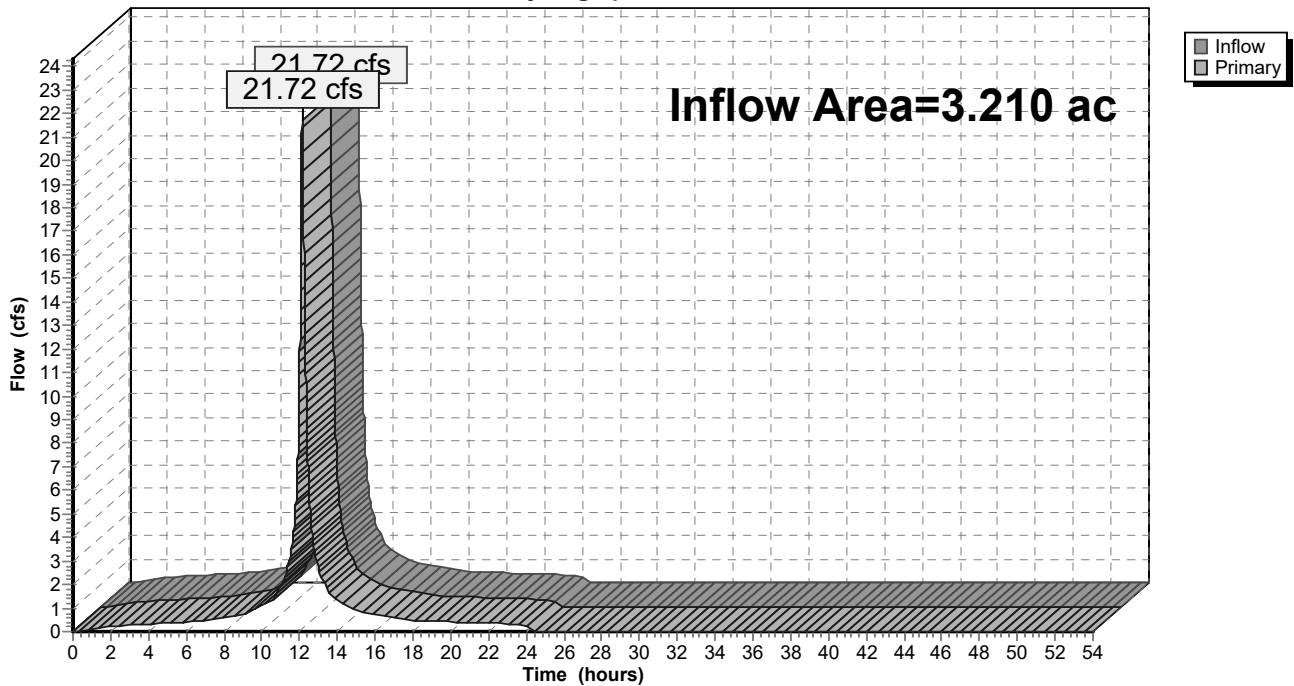
### Summary for Link POA-E4\*: POA-E4\* (24" RCP)

Inflow Area = 3.210 ac, 85.26% Impervious, Inflow Depth = 7.78" for 5-MER 100YR event  
Inflow = 21.72 cfs @ 12.14 hrs, Volume= 2.082 af  
Primary = 21.72 cfs @ 12.14 hrs, Volume= 2.082 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-E4\*: POA-E4\* (24" RCP)

Hydrograph



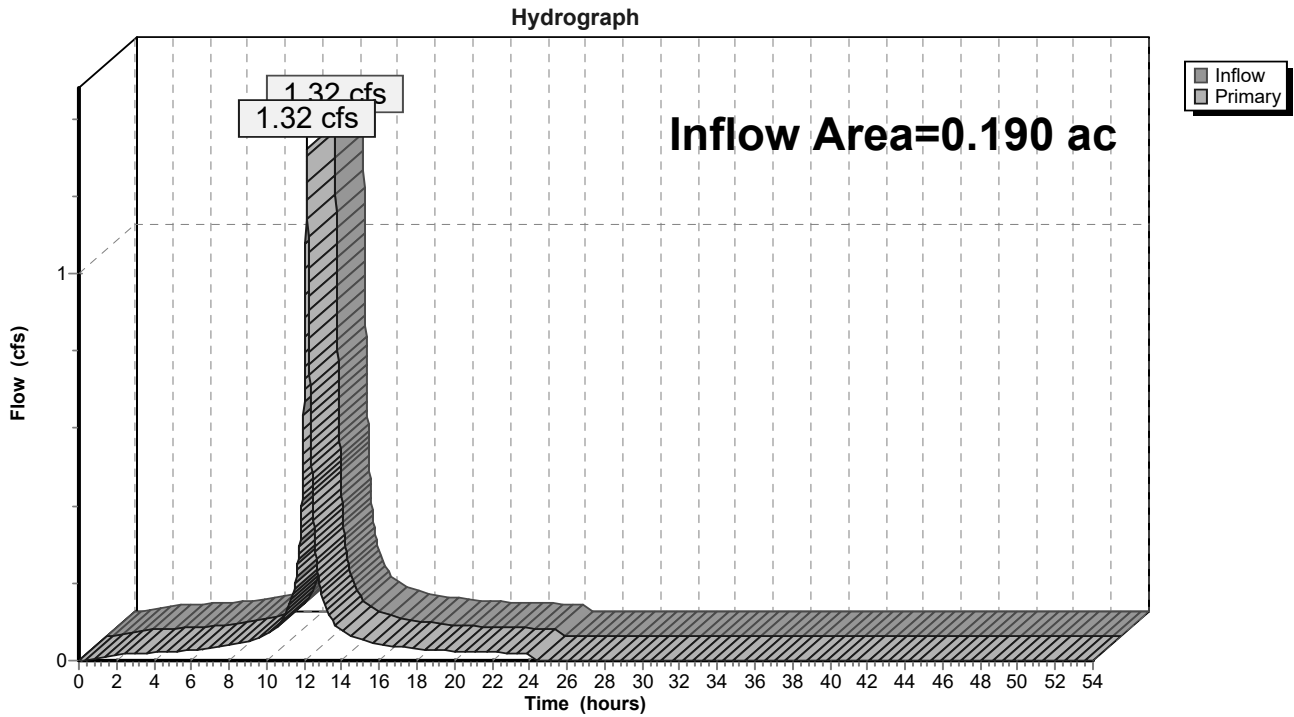


**Summary for Link POA-E5\*: POA-E5 (10" TER\*)**

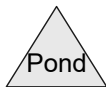
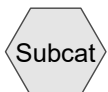
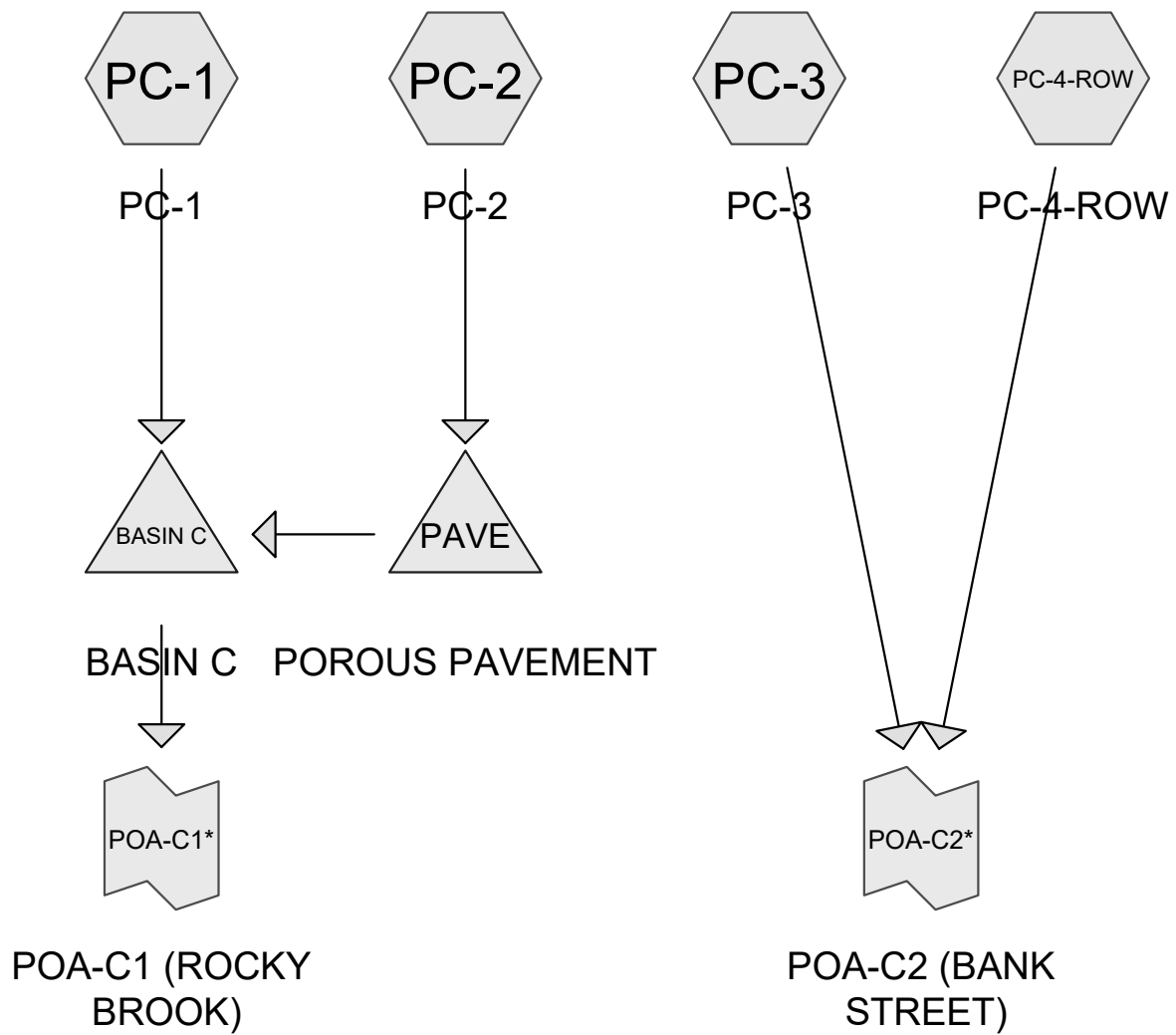
Inflow Area = 0.190 ac, 100.00% Impervious, Inflow Depth = 8.11" for 5-MER 100YR event  
Inflow = 1.32 cfs @ 12.14 hrs, Volume= 0.128 af  
Primary = 1.32 cfs @ 12.14 hrs, Volume= 0.128 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

**Link POA-E5\*: POA-E5 (10" TER\*)**



# TRACT C PROPOSED



## **200811\_Model**

Prepared by Maser Consulting

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### **Project Notes**

Rainfall events imported from "200330\_Analysis.hcp"

## 200811\_Model

Prepared by Maser Consulting

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### Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-MER 1YR	NRCC 24-hr	C	Default	24.00	1	2.74	2
2	2-MER 2YR	NRCC 24-hr	C	Default	24.00	1	3.31	2
3	3-MER 10YR	NRCC 24-hr	C	Default	24.00	1	5.02	2
4	4-MER 25YR	NRCC 24-hr	C	Default	24.00	1	6.20	2
5	5-MER 100YR	NRCC 24-hr	C	Default	24.00	1	8.35	2
6	NJDEP WQ	NJ DEP 2-hr		Default	2.00	1	1.25	2

**Area Listing (selected nodes)**

Area (acres)	CN	Description (subcatchment-numbers)
0.064	39	>75% Grass cover, Good, HSG A (PC-2, PC-3, PC-4-ROW)
0.046	61	>75% Grass cover, Good, HSG B (PC-2, PC-3, PC-4-ROW)
0.101	98	Paved parking, HSG A (PC-2)
0.106	98	Paved parking, HSG B (PC-2, PC-4-ROW)
0.022	98	Sidewalks, HSG A (PC-2, PC-3)
0.011	98	Sidewalks, HSG B (PC-2, PC-3)
0.131	98	Unconnected roofs, HSG A (PC-1)
0.069	98	Unconnected roofs, HSG B (PC-1)
<b>0.550</b>	<b>88</b>	<b>TOTAL AREA</b>

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### Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.318	HSG A	PC-1, PC-2, PC-3, PC-4-ROW
0.232	HSG B	PC-1, PC-2, PC-3, PC-4-ROW
0.000	HSG C	
0.000	HSG D	
0.000	Other	
<b>0.550</b>		<b>TOTAL AREA</b>

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**Ground Covers (selected nodes)**

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.064	0.046	0.000	0.000	0.000	0.110	>75% Grass cover, Good	PC-2, PC-3, PC-4-RO W
0.101	0.106	0.000	0.000	0.000	0.207	Paved parking	PC-2, PC-4-RO W
0.022	0.011	0.000	0.000	0.000	0.033	Sidewalks	PC-2, PC-3
0.131	0.069	0.000	0.000	0.000	0.200	Unconnected roofs	PC-1
<b>0.318</b>	<b>0.232</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.550</b>	<b>TOTAL AREA</b>	

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**Pipe Listing (selected nodes)**

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	BASIN C	91.50	91.38	25.0	0.0048	0.013	15.0	0.0	0.0



Time span=0.00-54.00 hrs, dt=0.01 hrs, 5401 points  
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious  
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

<b>Subcatchment PC-1: PC-1</b>	Runoff Area=0.200 ac 0.00% Impervious Runoff Depth=2.51" Tc=6.0 min CN=98/0 Runoff=0.45 cfs 0.042 af
<b>Subcatchment PC-2: PC-2</b>	Runoff Area=0.230 ac 77.39% Impervious Runoff Depth=1.94" Tc=6.0 min CN=44/98 Runoff=0.40 cfs 0.037 af
<b>Subcatchment PC-3: PC-3</b>	Runoff Area=0.050 ac 20.00% Impervious Runoff Depth=0.58" Tc=6.0 min CN=53/98 Runoff=0.02 cfs 0.002 af
<b>Subcatchment PC-4-ROW: PC-4-ROW</b>	Runoff Area=0.070 ac 74.29% Impervious Runoff Depth=1.88" Tc=6.0 min CN=50/98 Runoff=0.12 cfs 0.011 af
<b>Pond BASIN C: BASIN C</b>	Peak Elev=92.85' Storage=0.029 af Inflow=0.85 cfs 0.079 af Outflow=0.08 cfs 0.079 af
<b>Pond PAVE: POROUS PAVEMENT</b>	Peak Elev=96.00' Storage=0.000 af Inflow=0.40 cfs 0.037 af Outflow=0.40 cfs 0.037 af
<b>Link POA-C1*: POA-C1 (ROCKY BROOK)</b>	Inflow=0.08 cfs 0.079 af Primary=0.08 cfs 0.079 af
<b>Link POA-C2*: POA-C2 (BANK STREET)</b>	Inflow=0.14 cfs 0.013 af Primary=0.14 cfs 0.013 af

**Total Runoff Area = 0.550 ac Runoff Volume = 0.092 af Average Runoff Depth = 2.02"**  
**56.36% Pervious = 0.310 ac 43.64% Impervious = 0.240 ac**

**Summary for Subcatchment PC-1: PC-1**

Runoff = 0.45 cfs @ 12.14 hrs, Volume= 0.042 af, Depth= 2.51"

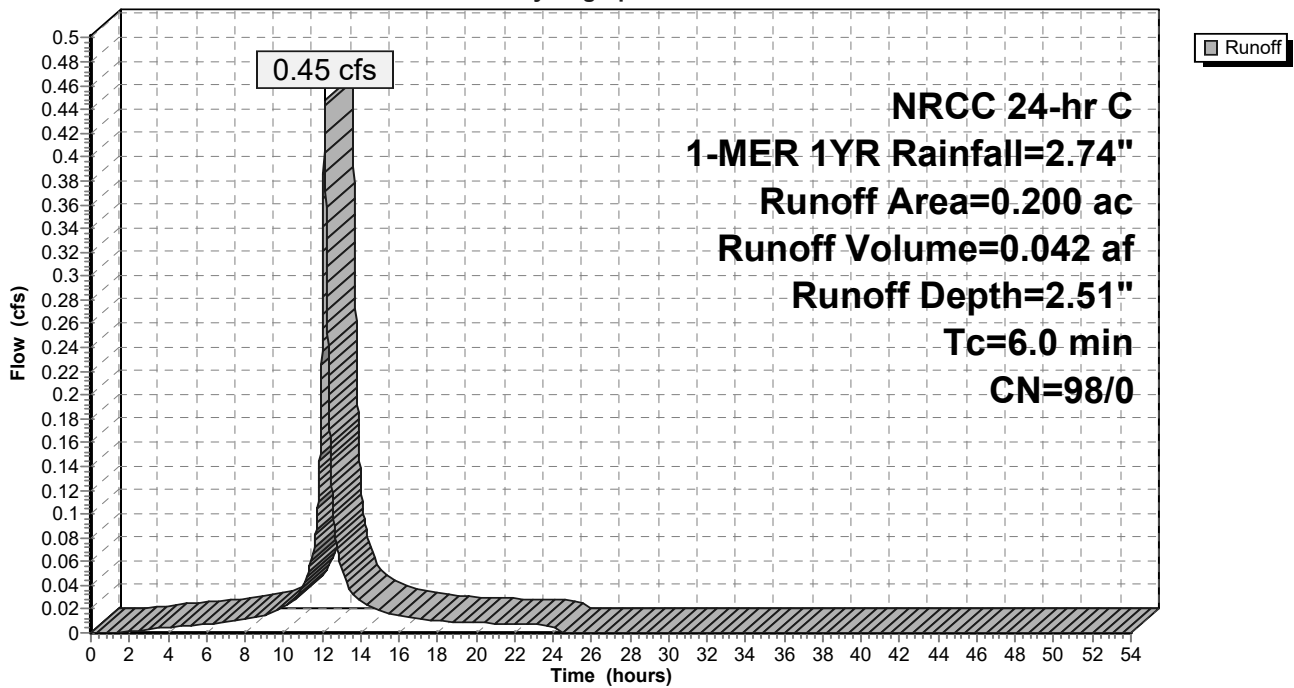
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 1-MER 1YR Rainfall=2.74"

Area (ac)	CN	Description
0.131	98	Unconnected roofs, HSG A
0.069	98	Unconnected roofs, HSG B
0.200	98	Weighted Average
0.200	98	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PC-1: PC-1**

Hydrograph



**Summary for Subcatchment PC-2: PC-2**

Runoff = 0.40 cfs @ 12.14 hrs, Volume= 0.037 af, Depth= 1.94"

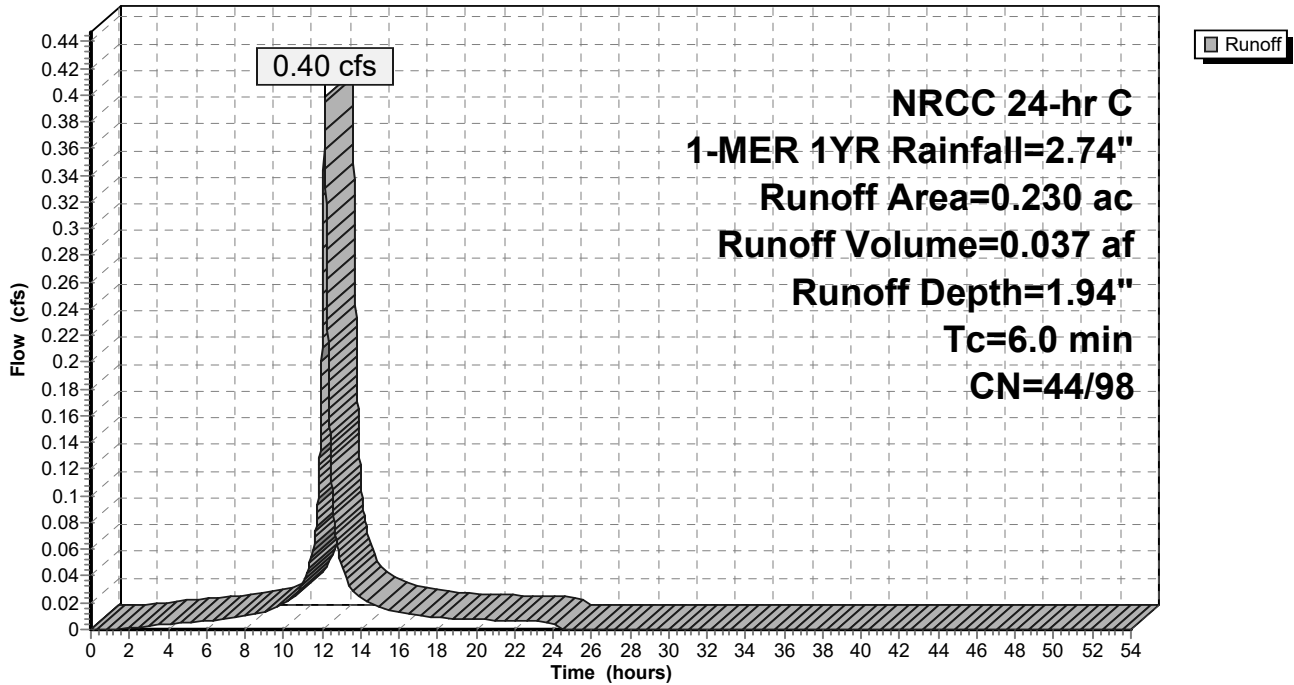
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 1-MER 1YR Rainfall=2.74"

Area (ac)	CN	Description
* 0.018	98	Sidewalks, HSG A
0.101	98	Paved parking, HSG A
0.040	39	>75% Grass cover, Good, HSG A
* 0.005	98	Sidewalks, HSG B
0.054	98	Paved parking, HSG B
0.012	61	>75% Grass cover, Good, HSG B
0.230	86	Weighted Average
0.052	44	22.61% Pervious Area
0.178	98	77.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PC-2: PC-2**

Hydrograph



**Summary for Subcatchment PC-3: PC-3**

Runoff = 0.02 cfs @ 12.14 hrs, Volume= 0.002 af, Depth= 0.58"

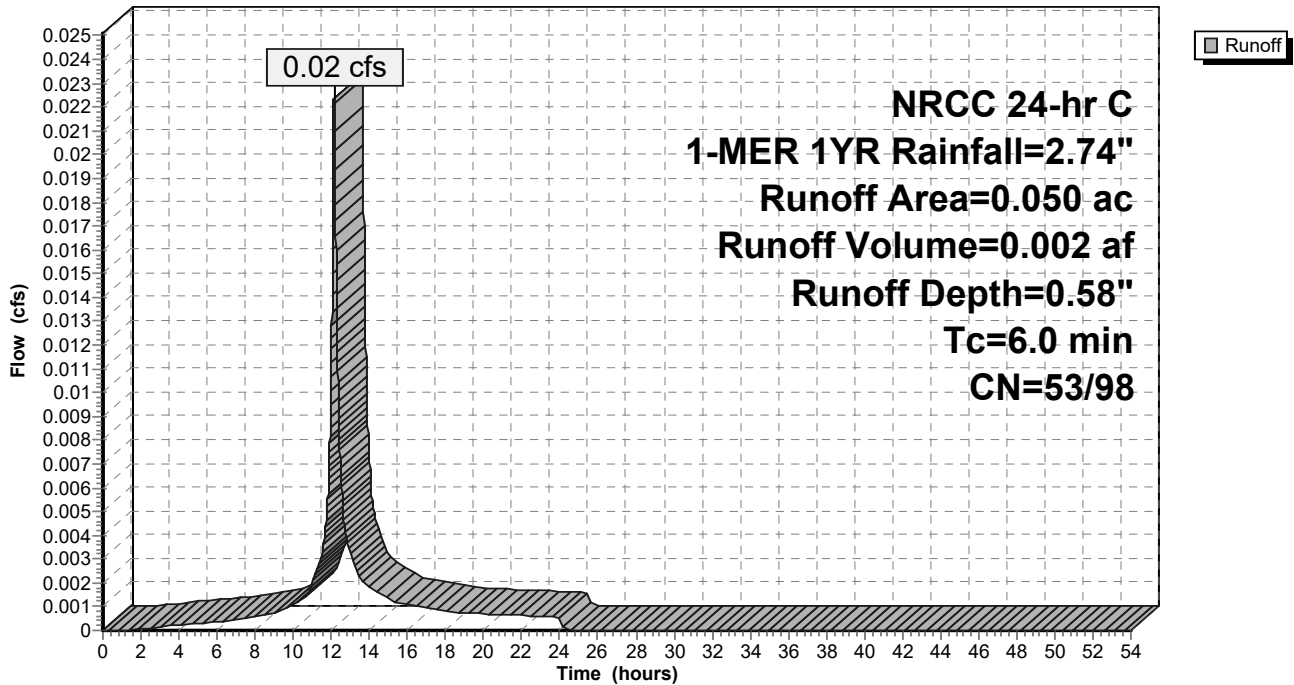
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 1-MER 1YR Rainfall=2.74"

Area (ac)	CN	Description
* 0.006	98	Sidewalks, HSG B
0.025	61	>75% Grass cover, Good, HSG B
* 0.004	98	Sidewalks, HSG A
0.015	39	>75% Grass cover, Good, HSG A
0.050	62	Weighted Average
0.040	53	80.00% Pervious Area
0.010	98	20.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PC-3: PC-3**

Hydrograph



**Summary for Subcatchment PC-4-ROW: PC-4-ROW**

Runoff = 0.12 cfs @ 12.14 hrs, Volume= 0.011 af, Depth= 1.88"

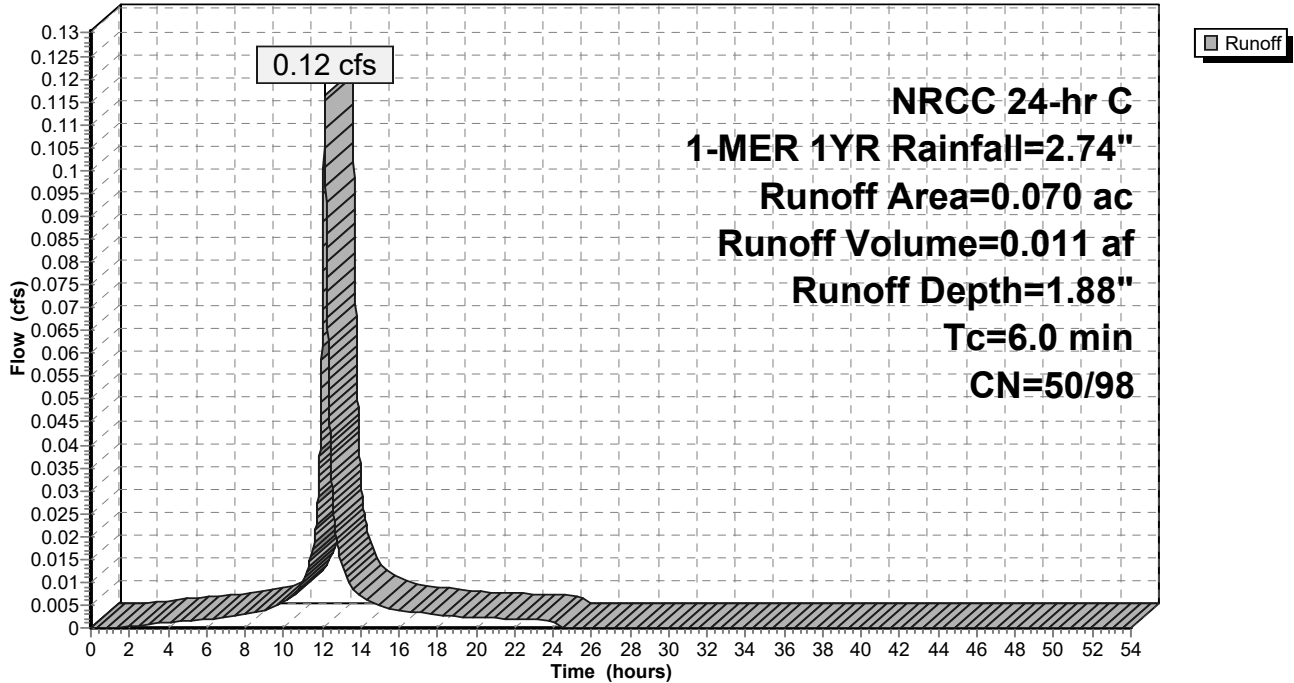
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 1-MER 1YR Rainfall=2.74"

Area (ac)	CN	Description
0.009	61	>75% Grass cover, Good, HSG B
0.009	39	>75% Grass cover, Good, HSG A
0.052	98	Paved parking, HSG B
0.070	86	Weighted Average
0.018	50	25.71% Pervious Area
0.052	98	74.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PC-4-ROW: PC-4-ROW**

Hydrograph



**Summary for Pond BASIN C: BASIN C**

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=172)

Inflow Area = 0.430 ac, 41.40% Impervious, Inflow Depth = 2.21" for 1-MER 1YR event  
 Inflow = 0.85 cfs @ 12.14 hrs, Volume= 0.079 af  
 Outflow = 0.08 cfs @ 13.29 hrs, Volume= 0.079 af, Atten= 91%, Lag= 69.0 min  
 Primary = 0.08 cfs @ 13.29 hrs, Volume= 0.079 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs  
 Peak Elev= 92.85' @ 13.29 hrs Surf.Area= 0.075 ac Storage= 0.029 af

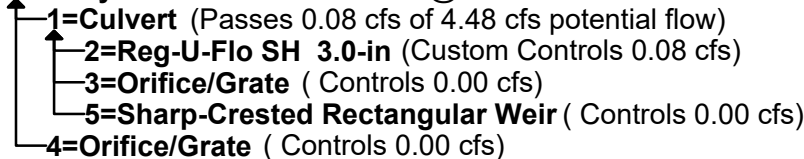
Plug-Flow detention time= (not calculated: outflow precedes inflow)  
 Center-of-Mass det. time= 120.3 min ( 886.2 - 765.9 )

Volume	Invert	Avail.Storage	Storage Description
#1A	91.00'	0.000 af	<b>25.00'W x 131.00'L x 5.00'H Field A</b> 0.376 af Overall - 0.139 af Embedded = 0.237 af x 0.0% Voids
#2A	91.50'	0.111 af	<b>ADS N-12 42" x 24 Inside #1</b> Inside= 41.1"W x 41.1"H => 9.20 sf x 20.00'L = 184.0 cf Outside= 48.0"W x 48.0"H => 11.55 sf x 20.00'L = 231.0 cf 24 Chambers in 4 Rows 22.00' Header x 9.20 sf x 2 = 404.7 cf Inside
		0.111 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	91.50'	<b>15.0" Round Culvert</b> L= 25.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 91.50' / 91.38' S= 0.0048 1/ S Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	91.50'	<b>Reg-U-Flo SH 3.0-in</b>
#3	Device 1	93.15'	<b>2.5" Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#4	Primary	93.75'	<b>4.0" Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#5	Device 1	94.75'	<b>4.0' long Sharp-Crested Rectangular Weir</b> 2 End Contraction(s)

**Primary OutFlow** Max=0.08 cfs @ 13.29 hrs HW=92.85' TW=0.00' (Dynamic Tailwater)



**Pond BASIN C: BASIN C - Chamber Wizard Field A**

**Chamber Model = ADS N-12 42" (ADS N-12® Pipe)**

Inside= 41.1"W x 41.1"H => 9.20 sf x 20.00'L = 184.0 cf

Outside= 48.0"W x 48.0"H => 11.55 sf x 20.00'L = 231.0 cf

48.0" Wide + 24.0" Spacing = 72.0" C-C Row Spacing

6 Chambers/Row x 20.00' Long +4.00' Header x 2 = 128.00' Row Length +18.0" End Stone x 2 = 131.00' Base Length

4 Rows x 48.0" Wide + 24.0" Spacing x 3 + 18.0" Side Stone x 2 = 25.00' Base Width

6.0" Stone Base + 48.0" Chamber Height + 6.0" Stone Cover = 5.00' Field Height

24 Chambers x 184.0 cf + 22.00' Header x 9.20 sf x 2 = 4,820.7 cf Chamber Storage

24 Chambers x 231.0 cf + 22.00' Header x 11.55 sf x 2 = 6,052.9 cf Displacement

16,370.1 cf Field - 6,052.9 cf Chambers = 10,317.2 cf Stone x 0.0% Voids = 0.0 cf Stone Storage

Chamber Storage = 4,820.7 cf = 0.111 af

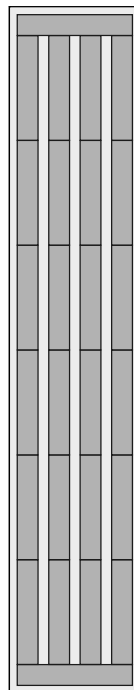
Overall Storage Efficiency = 29.4%

Overall System Size = 131.00' x 25.00' x 5.00'

24 Chambers

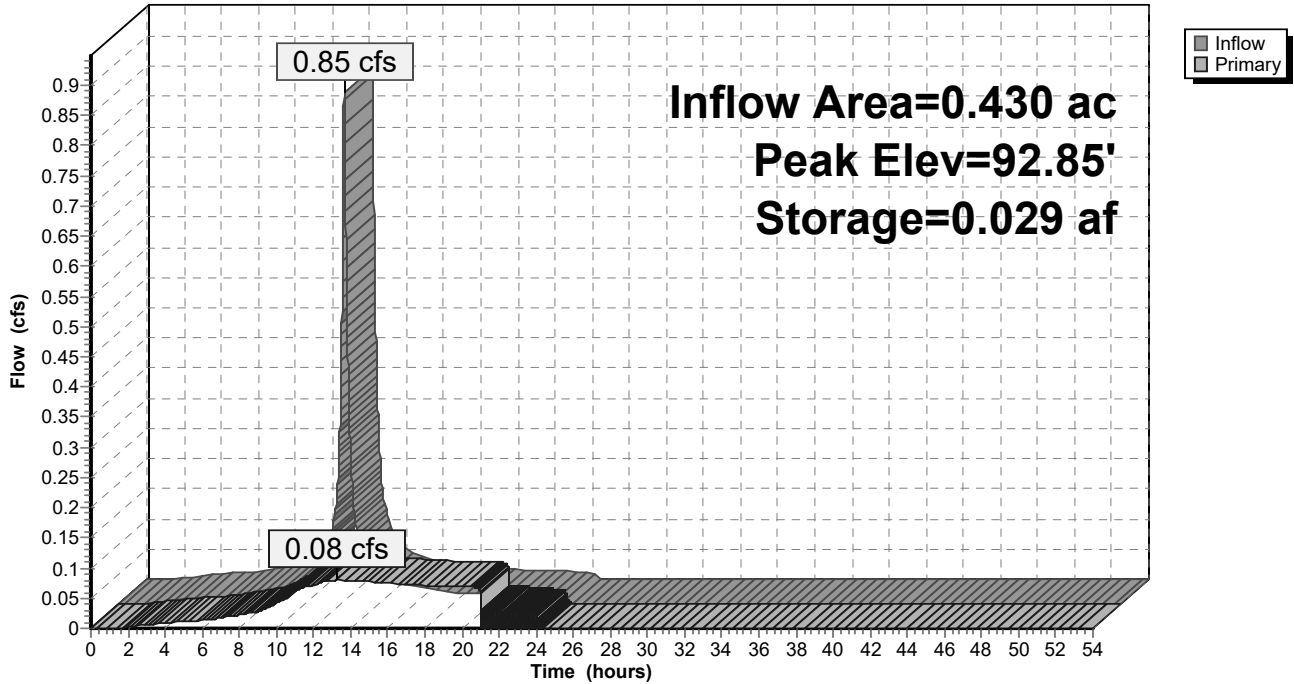
606.3 cy Field

382.1 cy Stone



### Pond BASIN C: BASIN C

Hydrograph





**Summary for Pond PAVE: POROUS PAVEMENT**

[42] Hint: Gap in defined storage above volume #1 at 97.50'

[44] Hint: Outlet device #2 is below defined storage

Inflow Area = 0.230 ac, 77.39% Impervious, Inflow Depth = 1.94" for 1-MER 1YR event  
 Inflow = 0.40 cfs @ 12.14 hrs, Volume= 0.037 af  
 Outflow = 0.40 cfs @ 12.14 hrs, Volume= 0.037 af, Atten= 0%, Lag= 0.0 min  
 Primary = 0.40 cfs @ 12.14 hrs, Volume= 0.037 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs  
 Peak Elev= 96.00' @ 0.00 hrs Surf.Area= 0.016 ac Storage= 0.000 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)  
 Center-of-Mass det. time= 0.0 min ( 766.0 - 766.0 )

Volume	Invert	Avail.Storage	Storage Description
#1	96.00'	0.010 af	<b>Porous Pavement - East (Prismatic)</b> Listed below (Recalc) 0.024 af Overall x 40.0% Voids
#2	98.50'	0.014 af	<b>Porous Pavement - West (Prismatic)</b> Listed below (Recalc) 0.034 af Overall x 40.0% Voids
		0.023 af	Total Available Storage

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
96.00	0.016	0.000	0.000
97.50	0.016	0.024	0.024

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
98.50	0.023	0.000	0.000
100.00	0.023	0.034	0.034

Device	Routing	Invert	Outlet Devices
#1	Primary	93.00'	<b>15.0" Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#2	Device 1	93.00'	<b>5.0" Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads

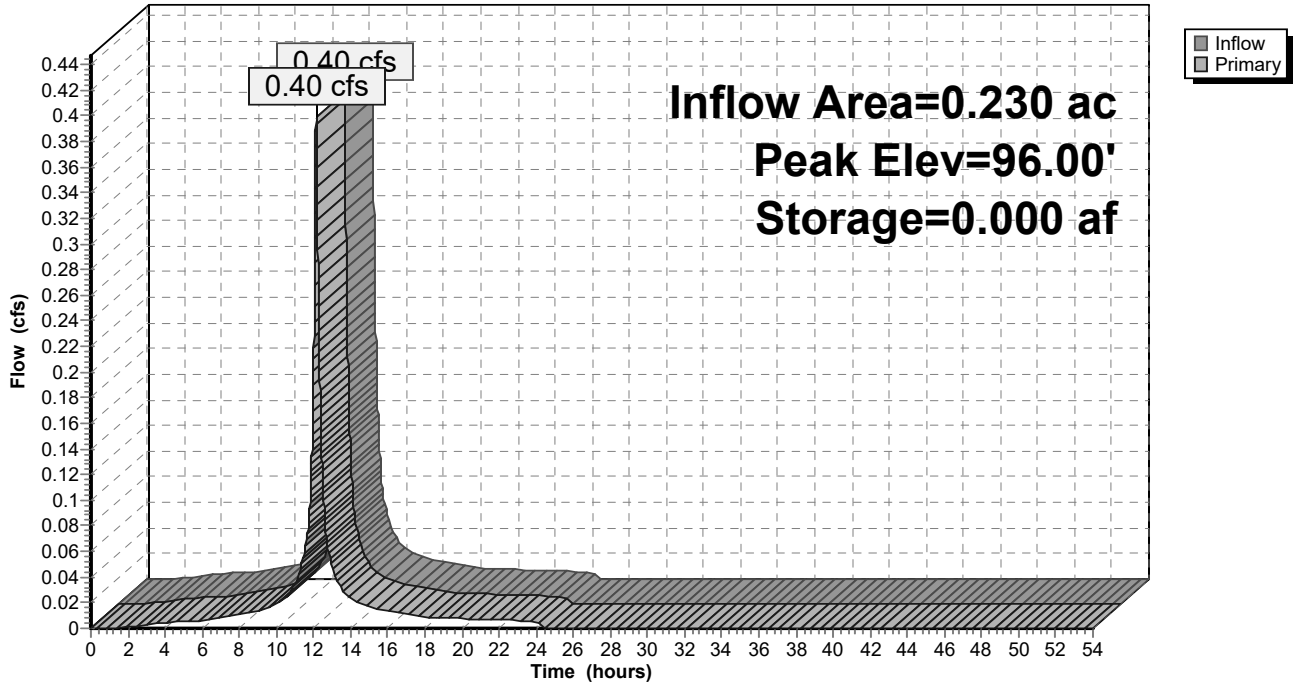
**Primary OutFlow** Max=0.00 cfs @ 12.14 hrs HW=96.00' TW=92.41' (Dynamic Tailwater)

↑1=Orifice/Grate (Passes 0.00 cfs of 9.11 cfs potential flow)

↑2=Orifice/Grate (Passes 0.00 cfs of 1.10 cfs potential flow)

### Pond PAVE: POROUS PAVEMENT

Hydrograph

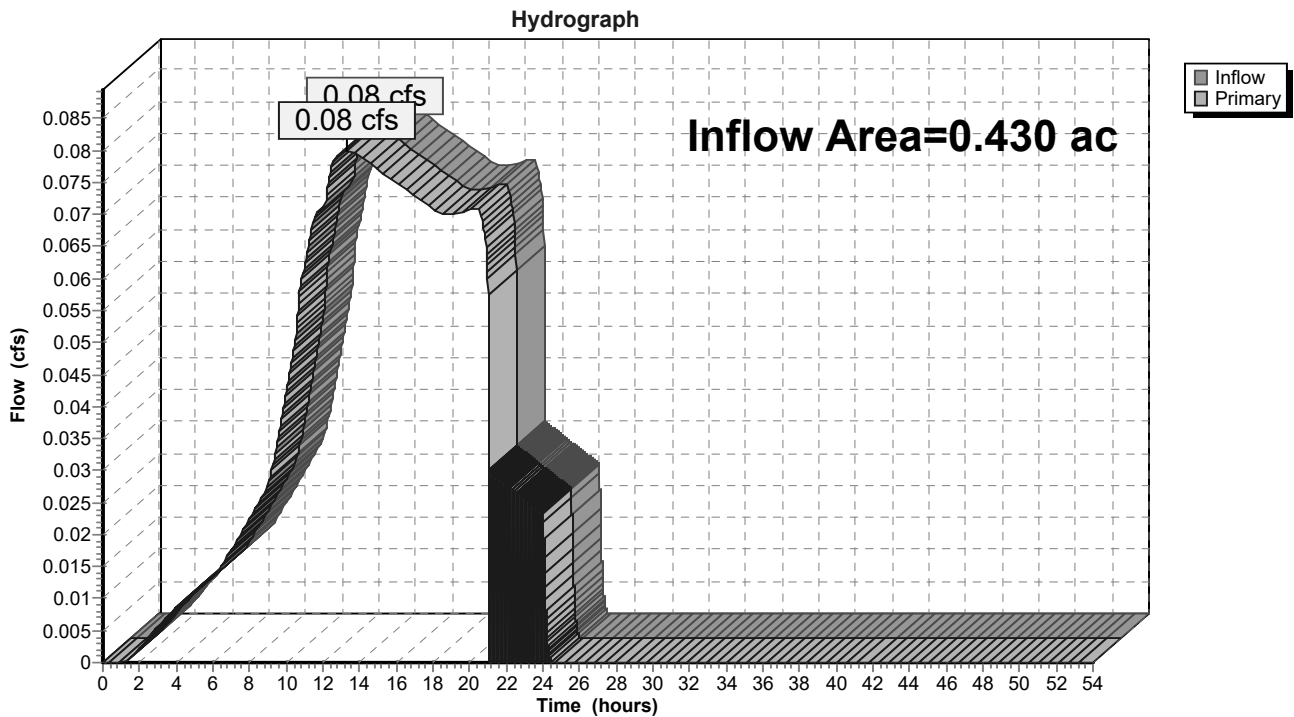


### Summary for Link POA-C1\*: POA-C1 (ROCKY BROOK)

Inflow Area = 0.430 ac, 41.40% Impervious, Inflow Depth = 2.21" for 1-MER 1YR event  
Inflow = 0.08 cfs @ 13.29 hrs, Volume= 0.079 af  
Primary = 0.08 cfs @ 13.29 hrs, Volume= 0.079 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-C1\*: POA-C1 (ROCKY BROOK)



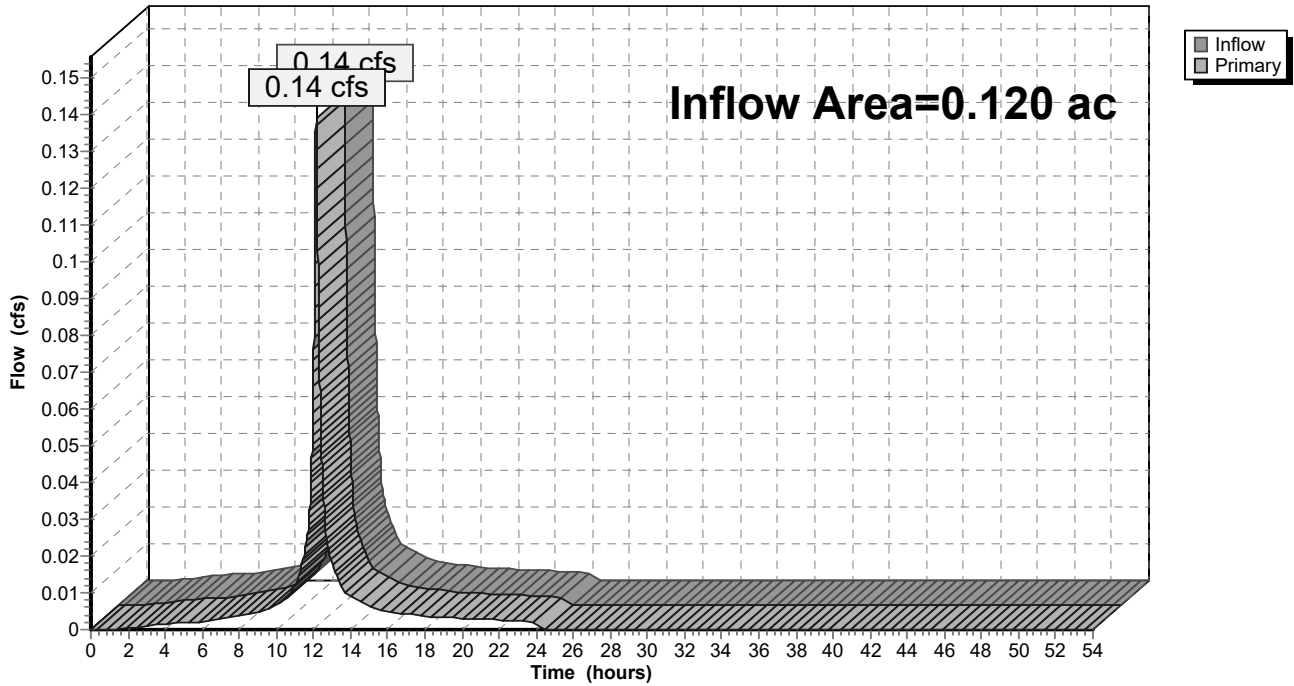
### Summary for Link POA-C2\*: POA-C2 (BANK STREET)

Inflow Area = 0.120 ac, 51.67% Impervious, Inflow Depth = 1.34" for 1-MER 1YR event  
Inflow = 0.14 cfs @ 12.14 hrs, Volume= 0.013 af  
Primary = 0.14 cfs @ 12.14 hrs, Volume= 0.013 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-C2\*: POA-C2 (BANK STREET)

Hydrograph



Time span=0.00-54.00 hrs, dt=0.01 hrs, 5401 points  
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious  
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

<b>Subcatchment PC-1: PC-1</b>	Runoff Area=0.200 ac 0.00% Impervious Runoff Depth=3.08" Tc=6.0 min CN=98/0 Runoff=0.54 cfs 0.051 af
<b>Subcatchment PC-2: PC-2</b>	Runoff Area=0.230 ac 77.39% Impervious Runoff Depth=2.39" Tc=6.0 min CN=44/98 Runoff=0.48 cfs 0.046 af
<b>Subcatchment PC-3: PC-3</b>	Runoff Area=0.050 ac 20.00% Impervious Runoff Depth=0.80" Tc=6.0 min CN=53/98 Runoff=0.03 cfs 0.003 af
<b>Subcatchment PC-4-ROW: PC-4-ROW</b>	Runoff Area=0.070 ac 74.29% Impervious Runoff Depth=2.32" Tc=6.0 min CN=50/98 Runoff=0.14 cfs 0.014 af
<b>Pond BASIN C: BASIN C</b>	Peak Elev=93.08' Storage=0.038 af Inflow=1.03 cfs 0.097 af Outflow=0.09 cfs 0.097 af
<b>Pond PAVE: POROUS PAVEMENT</b>	Peak Elev=96.00' Storage=0.000 af Inflow=0.48 cfs 0.046 af Outflow=0.48 cfs 0.046 af
<b>Link POA-C1*: POA-C1 (ROCKY BROOK)</b>	Inflow=0.09 cfs 0.097 af Primary=0.09 cfs 0.097 af
<b>Link POA-C2*: POA-C2 (BANK STREET)</b>	Inflow=0.17 cfs 0.017 af Primary=0.17 cfs 0.017 af

**Total Runoff Area = 0.550 ac Runoff Volume = 0.114 af Average Runoff Depth = 2.49"**  
**56.36% Pervious = 0.310 ac 43.64% Impervious = 0.240 ac**

**Summary for Subcatchment PC-1: PC-1**

Runoff = 0.54 cfs @ 12.14 hrs, Volume= 0.051 af, Depth= 3.08"

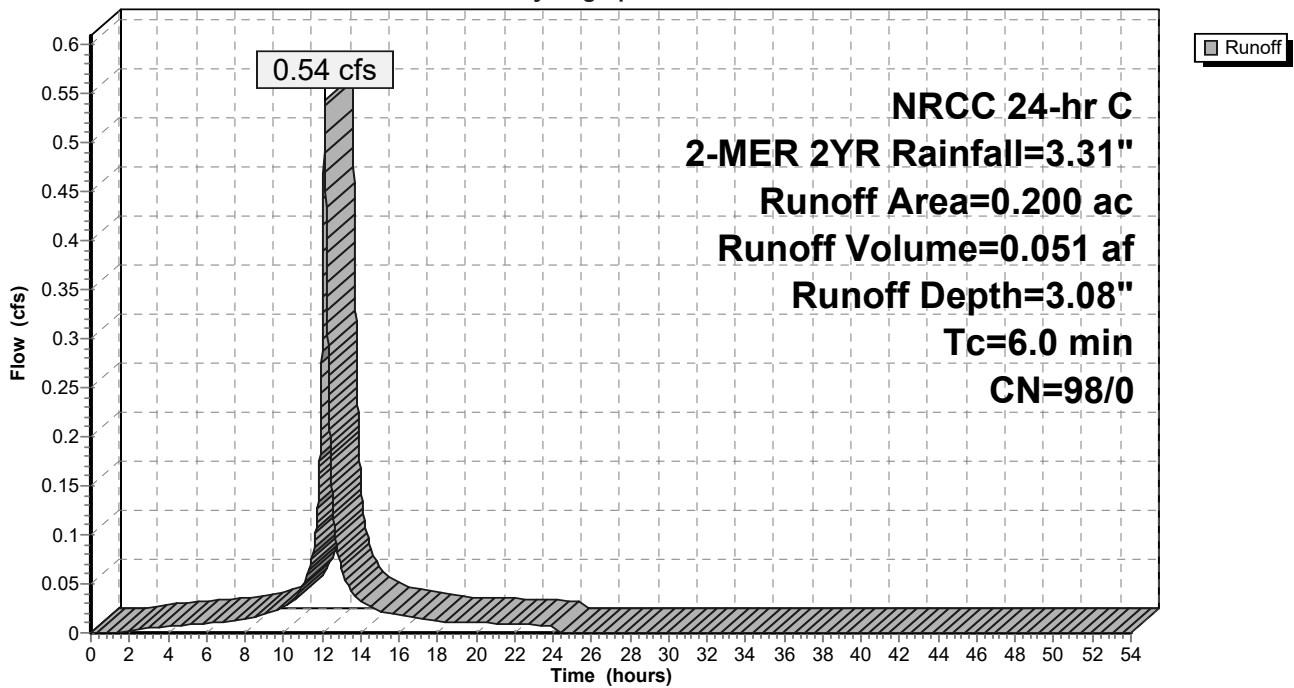
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 2-MER 2YR Rainfall=3.31"

Area (ac)	CN	Description
0.131	98	Unconnected roofs, HSG A
0.069	98	Unconnected roofs, HSG B
0.200	98	Weighted Average
0.200	98	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PC-1: PC-1**

Hydrograph



**Summary for Subcatchment PC-2: PC-2**

Runoff = 0.48 cfs @ 12.14 hrs, Volume= 0.046 af, Depth= 2.39"

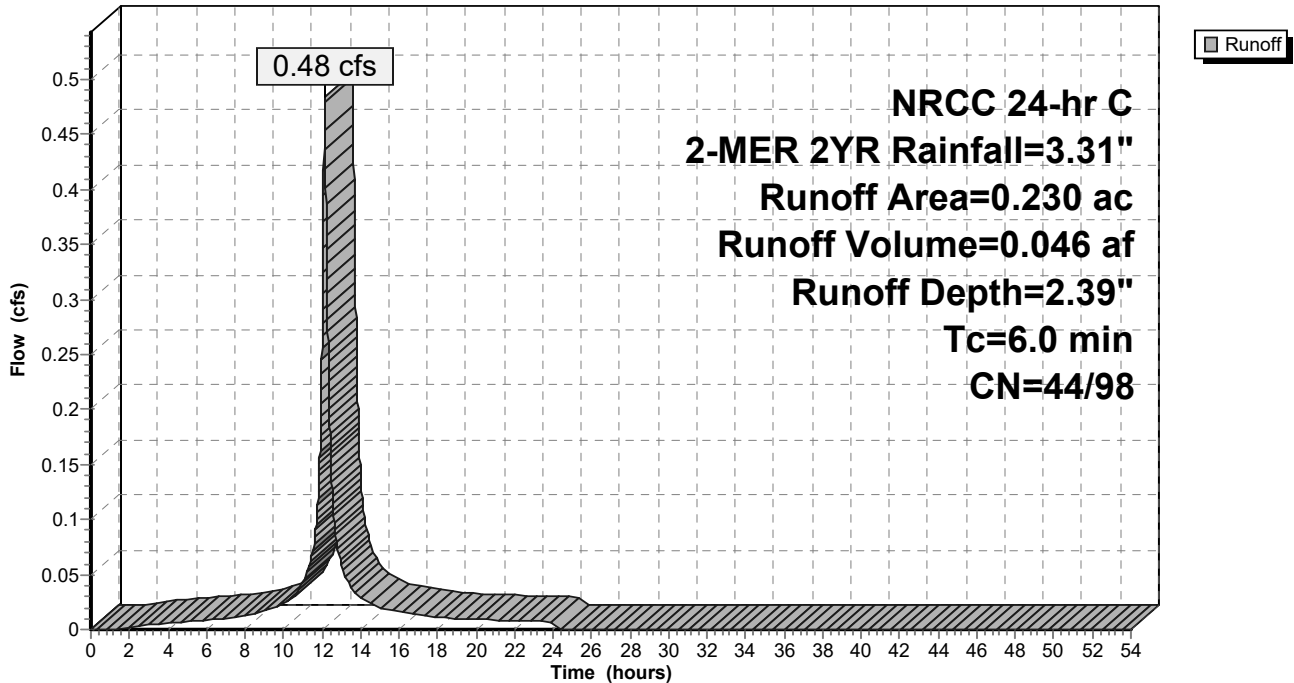
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 2-MER 2YR Rainfall=3.31"

Area (ac)	CN	Description
* 0.018	98	Sidewalks, HSG A
0.101	98	Paved parking, HSG A
0.040	39	>75% Grass cover, Good, HSG A
* 0.005	98	Sidewalks, HSG B
0.054	98	Paved parking, HSG B
0.012	61	>75% Grass cover, Good, HSG B
0.230	86	Weighted Average
0.052	44	22.61% Pervious Area
0.178	98	77.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PC-2: PC-2**

Hydrograph



**Summary for Subcatchment PC-3: PC-3**

Runoff = 0.03 cfs @ 12.14 hrs, Volume= 0.003 af, Depth= 0.80"

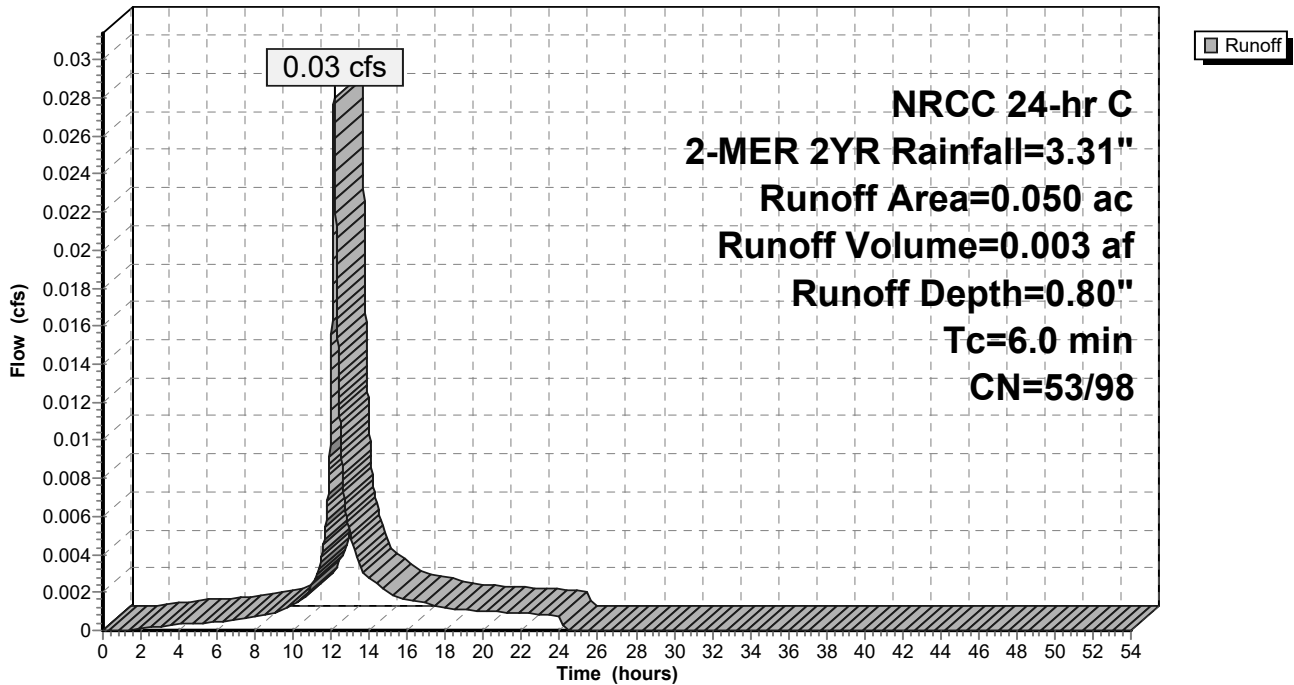
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 2-MER 2YR Rainfall=3.31"

Area (ac)	CN	Description
* 0.006	98	Sidewalks, HSG B
0.025	61	>75% Grass cover, Good, HSG B
* 0.004	98	Sidewalks, HSG A
0.015	39	>75% Grass cover, Good, HSG A
0.050	62	Weighted Average
0.040	53	80.00% Pervious Area
0.010	98	20.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PC-3: PC-3**

Hydrograph





**Summary for Subcatchment PC-4-ROW: PC-4-ROW**

Runoff = 0.14 cfs @ 12.14 hrs, Volume= 0.014 af, Depth= 2.32"

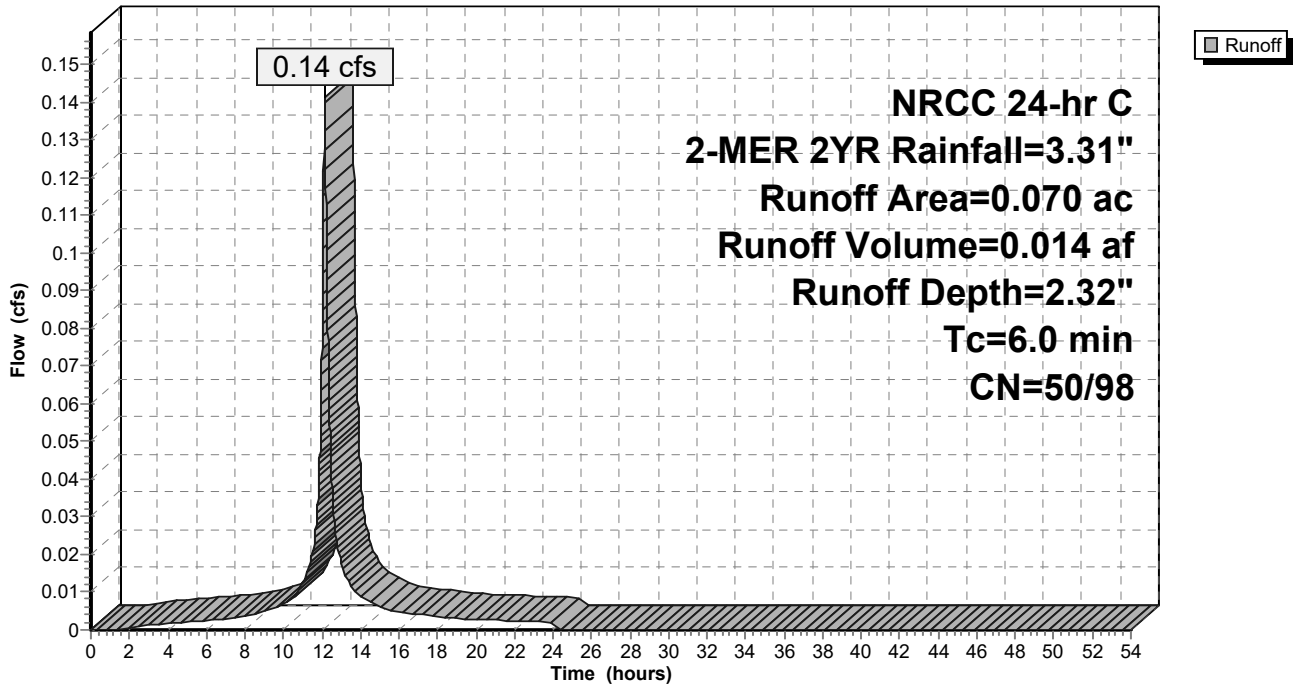
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 2-MER 2YR Rainfall=3.31"

Area (ac)	CN	Description
0.009	61	>75% Grass cover, Good, HSG B
0.009	39	>75% Grass cover, Good, HSG A
0.052	98	Paved parking, HSG B
0.070	86	Weighted Average
0.018	50	25.71% Pervious Area
0.052	98	74.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PC-4-ROW: PC-4-ROW**

Hydrograph



**Summary for Pond BASIN C: BASIN C**

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=60)

Inflow Area = 0.430 ac, 41.40% Impervious, Inflow Depth = 2.71" for 2-MER 2YR event  
 Inflow = 1.03 cfs @ 12.14 hrs, Volume= 0.097 af  
 Outflow = 0.09 cfs @ 13.44 hrs, Volume= 0.097 af, Atten= 92%, Lag= 77.8 min  
 Primary = 0.09 cfs @ 13.44 hrs, Volume= 0.097 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs  
 Peak Elev= 93.08' @ 13.44 hrs Surf.Area= 0.075 ac Storage= 0.038 af

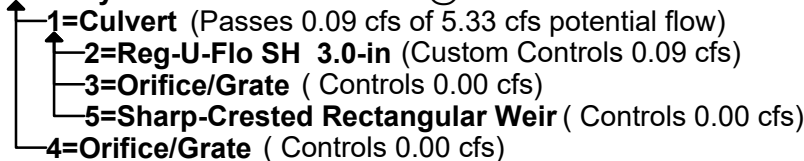
Plug-Flow detention time= (not calculated: outflow precedes inflow)  
 Center-of-Mass det. time= 157.1 min ( 919.2 - 762.1 )

Volume	Invert	Avail.Storage	Storage Description
#1A	91.00'	0.000 af	<b>25.00'W x 131.00'L x 5.00'H Field A</b> 0.376 af Overall - 0.139 af Embedded = 0.237 af x 0.0% Voids
#2A	91.50'	0.111 af	<b>ADS N-12 42" x 24 Inside #1</b> Inside= 41.1"W x 41.1"H => 9.20 sf x 20.00'L = 184.0 cf Outside= 48.0"W x 48.0"H => 11.55 sf x 20.00'L = 231.0 cf 24 Chambers in 4 Rows 22.00' Header x 9.20 sf x 2 = 404.7 cf Inside
		0.111 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	91.50'	<b>15.0" Round Culvert</b> L= 25.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 91.50' / 91.38' S= 0.0048 1/ S= 0.0048 1/ Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	91.50'	<b>Reg-U-Flo SH 3.0-in</b>
#3	Device 1	93.15'	<b>2.5" Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#4	Primary	93.75'	<b>4.0" Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#5	Device 1	94.75'	<b>4.0' long Sharp-Crested Rectangular Weir</b> 2 End Contraction(s)

Primary OutFlow Max=0.09 cfs @ 13.44 hrs HW=93.08' TW=0.00' (Dynamic Tailwater)



**Pond BASIN C: BASIN C - Chamber Wizard Field A**

**Chamber Model = ADS N-12 42" (ADS N-12® Pipe)**

Inside= 41.1"W x 41.1"H => 9.20 sf x 20.00'L = 184.0 cf

Outside= 48.0"W x 48.0"H => 11.55 sf x 20.00'L = 231.0 cf

48.0" Wide + 24.0" Spacing = 72.0" C-C Row Spacing

6 Chambers/Row x 20.00' Long +4.00' Header x 2 = 128.00' Row Length +18.0" End Stone x 2 = 131.00' Base Length

4 Rows x 48.0" Wide + 24.0" Spacing x 3 + 18.0" Side Stone x 2 = 25.00' Base Width

6.0" Stone Base + 48.0" Chamber Height + 6.0" Stone Cover = 5.00' Field Height

24 Chambers x 184.0 cf + 22.00' Header x 9.20 sf x 2 = 4,820.7 cf Chamber Storage

24 Chambers x 231.0 cf + 22.00' Header x 11.55 sf x 2 = 6,052.9 cf Displacement

16,370.1 cf Field - 6,052.9 cf Chambers = 10,317.2 cf Stone x 0.0% Voids = 0.0 cf Stone Storage

Chamber Storage = 4,820.7 cf = 0.111 af

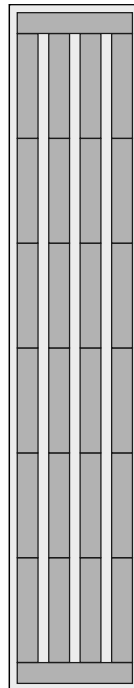
Overall Storage Efficiency = 29.4%

Overall System Size = 131.00' x 25.00' x 5.00'

24 Chambers

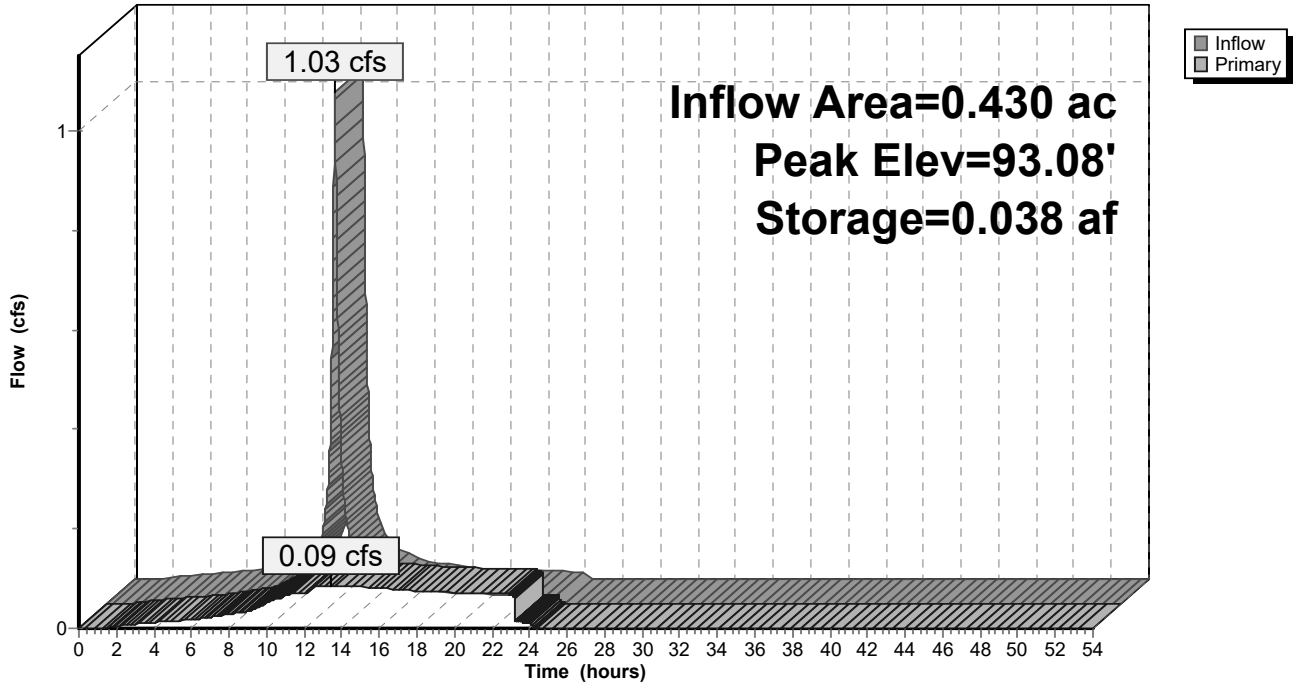
606.3 cy Field

382.1 cy Stone



### Pond BASIN C: BASIN C

Hydrograph



**Summary for Pond PAVE: POROUS PAVEMENT**

[42] Hint: Gap in defined storage above volume #1 at 97.50'

[44] Hint: Outlet device #2 is below defined storage

Inflow Area = 0.230 ac, 77.39% Impervious, Inflow Depth = 2.39" for 2-MER 2YR event  
 Inflow = 0.48 cfs @ 12.14 hrs, Volume= 0.046 af  
 Outflow = 0.48 cfs @ 12.14 hrs, Volume= 0.046 af, Atten= 0%, Lag= 0.0 min  
 Primary = 0.48 cfs @ 12.14 hrs, Volume= 0.046 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs  
 Peak Elev= 96.00' @ 12.14 hrs Surf.Area= 0.016 ac Storage= 0.000 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)  
 Center-of-Mass det. time= 0.0 min ( 762.9 - 762.9 )

Volume	Invert	Avail.Storage	Storage Description
#1	96.00'	0.010 af	<b>Porous Pavement - East (Prismatic)</b> Listed below (Recalc) 0.024 af Overall x 40.0% Voids
#2	98.50'	0.014 af	<b>Porous Pavement - West (Prismatic)</b> Listed below (Recalc) 0.034 af Overall x 40.0% Voids
		0.023 af	Total Available Storage

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
96.00	0.016	0.000	0.000
97.50	0.016	0.024	0.024

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
98.50	0.023	0.000	0.000
100.00	0.023	0.034	0.034

Device	Routing	Invert	Outlet Devices
#1	Primary	93.00'	<b>15.0" Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#2	Device 1	93.00'	<b>5.0" Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads

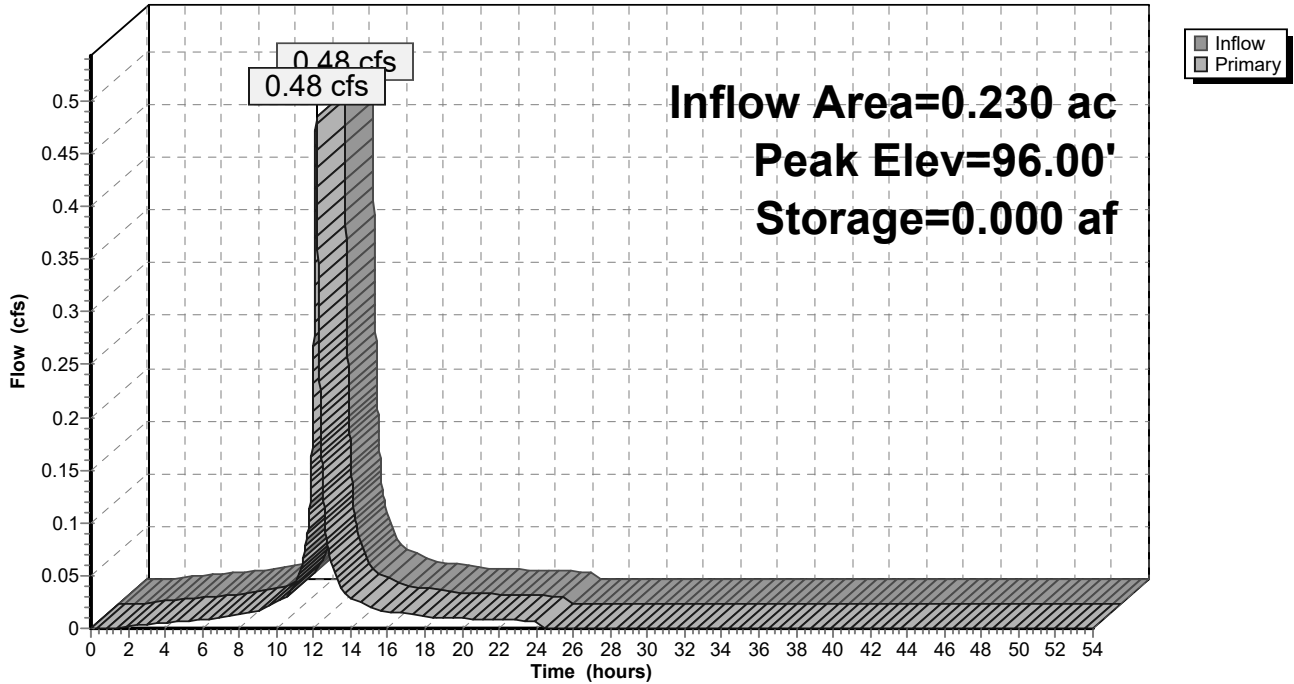
**Primary OutFlow** Max=1.10 cfs @ 12.14 hrs HW=96.00' TW=92.55' (Dynamic Tailwater)

↑1=Orifice/Grate (Passes 1.10 cfs of 9.11 cfs potential flow)

↑2=Orifice/Grate (Orifice Controls 1.10 cfs @ 8.04 fps)

### Pond PAVE: POROUS PAVEMENT

Hydrograph



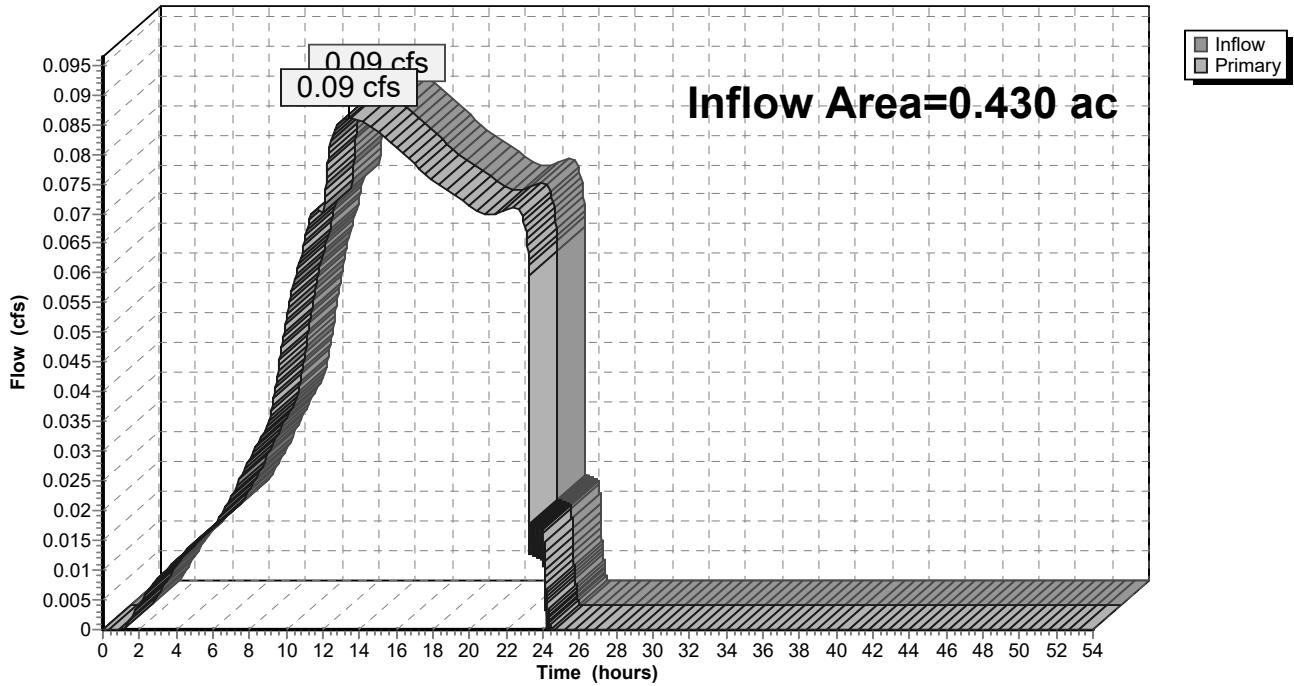
### Summary for Link POA-C1\*: POA-C1 (ROCKY BROOK)

Inflow Area = 0.430 ac, 41.40% Impervious, Inflow Depth = 2.71" for 2-MER 2YR event  
Inflow = 0.09 cfs @ 13.44 hrs, Volume= 0.097 af  
Primary = 0.09 cfs @ 13.44 hrs, Volume= 0.097 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-C1\*: POA-C1 (ROCKY BROOK)

Hydrograph



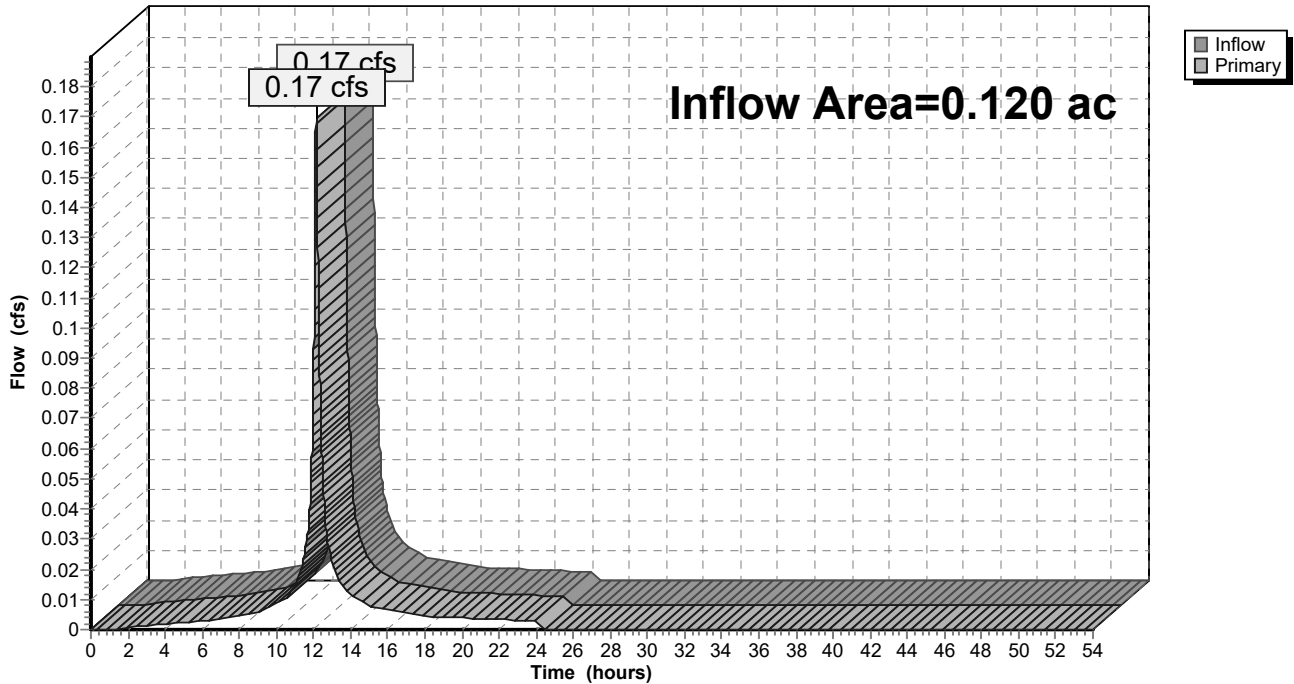
### Summary for Link POA-C2\*: POA-C2 (BANK STREET)

Inflow Area = 0.120 ac, 51.67% Impervious, Inflow Depth = 1.69" for 2-MER 2YR event  
Inflow = 0.17 cfs @ 12.14 hrs, Volume= 0.017 af  
Primary = 0.17 cfs @ 12.14 hrs, Volume= 0.017 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-C2\*: POA-C2 (BANK STREET)

Hydrograph





Time span=0.00-54.00 hrs, dt=0.01 hrs, 5401 points  
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious  
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

<b>Subcatchment PC-1: PC-1</b>	Runoff Area=0.200 ac 0.00% Impervious Runoff Depth=4.78" Tc=6.0 min CN=98/0 Runoff=0.83 cfs 0.080 af
<b>Subcatchment PC-2: PC-2</b>	Runoff Area=0.230 ac 77.39% Impervious Runoff Depth=3.79" Tc=6.0 min CN=44/98 Runoff=0.74 cfs 0.073 af
<b>Subcatchment PC-3: PC-3</b>	Runoff Area=0.050 ac 20.00% Impervious Runoff Depth=1.65" Tc=6.0 min CN=53/98 Runoff=0.07 cfs 0.007 af
<b>Subcatchment PC-4-ROW: PC-4-ROW</b>	Runoff Area=0.070 ac 74.29% Impervious Runoff Depth=3.73" Tc=6.0 min CN=50/98 Runoff=0.22 cfs 0.022 af
<b>Pond BASIN C: BASIN C</b>	Peak Elev=93.62' Storage=0.060 af Inflow=1.58 cfs 0.152 af Outflow=0.20 cfs 0.152 af
<b>Pond PAVE: POROUS PAVEMENT</b>	Peak Elev=96.00' Storage=0.000 af Inflow=0.74 cfs 0.073 af Outflow=0.74 cfs 0.073 af
<b>Link POA-C1*: POA-C1 (ROCKY BROOK)</b>	Inflow=0.20 cfs 0.152 af Primary=0.20 cfs 0.152 af
<b>Link POA-C2*: POA-C2 (BANK STREET)</b>	Inflow=0.29 cfs 0.029 af Primary=0.29 cfs 0.029 af

**Total Runoff Area = 0.550 ac Runoff Volume = 0.181 af Average Runoff Depth = 3.95"**  
**56.36% Pervious = 0.310 ac 43.64% Impervious = 0.240 ac**

**Summary for Subcatchment PC-1: PC-1**

Runoff = 0.83 cfs @ 12.14 hrs, Volume= 0.080 af, Depth= 4.78"

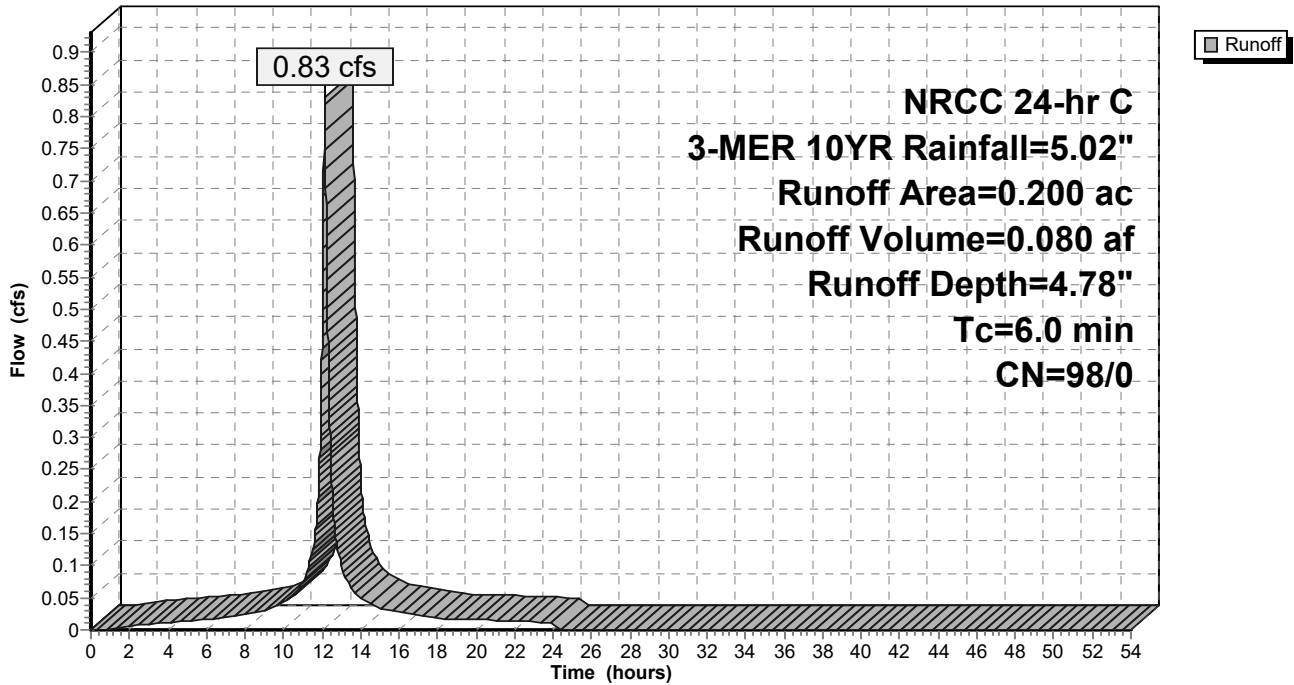
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 3-MER 10YR Rainfall=5.02"

Area (ac)	CN	Description
0.131	98	Unconnected roofs, HSG A
0.069	98	Unconnected roofs, HSG B
0.200	98	Weighted Average
0.200	98	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PC-1: PC-1**

Hydrograph



**Summary for Subcatchment PC-2: PC-2**

Runoff = 0.74 cfs @ 12.14 hrs, Volume= 0.073 af, Depth= 3.79"

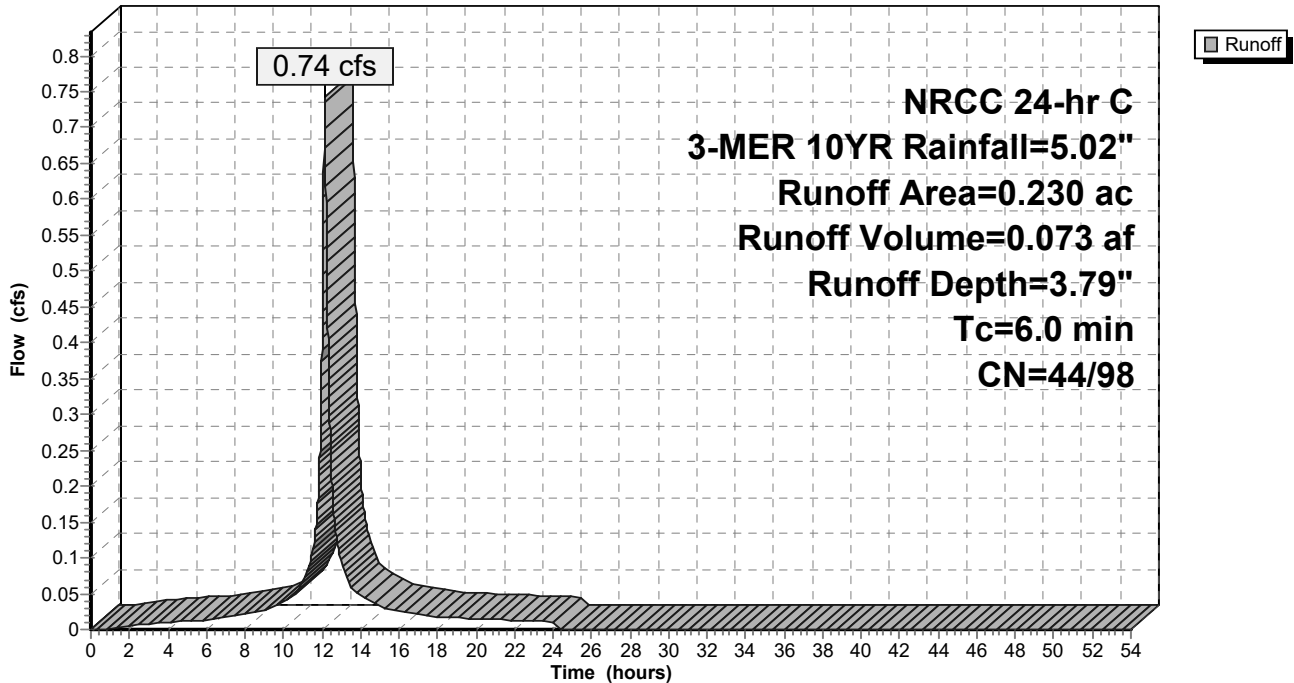
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 3-MER 10YR Rainfall=5.02"

Area (ac)	CN	Description
* 0.018	98	Sidewalks, HSG A
0.101	98	Paved parking, HSG A
0.040	39	>75% Grass cover, Good, HSG A
* 0.005	98	Sidewalks, HSG B
0.054	98	Paved parking, HSG B
0.012	61	>75% Grass cover, Good, HSG B
0.230	86	Weighted Average
0.052	44	22.61% Pervious Area
0.178	98	77.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PC-2: PC-2**

Hydrograph



**Summary for Subcatchment PC-3: PC-3**

Runoff = 0.07 cfs @ 12.15 hrs, Volume= 0.007 af, Depth= 1.65"

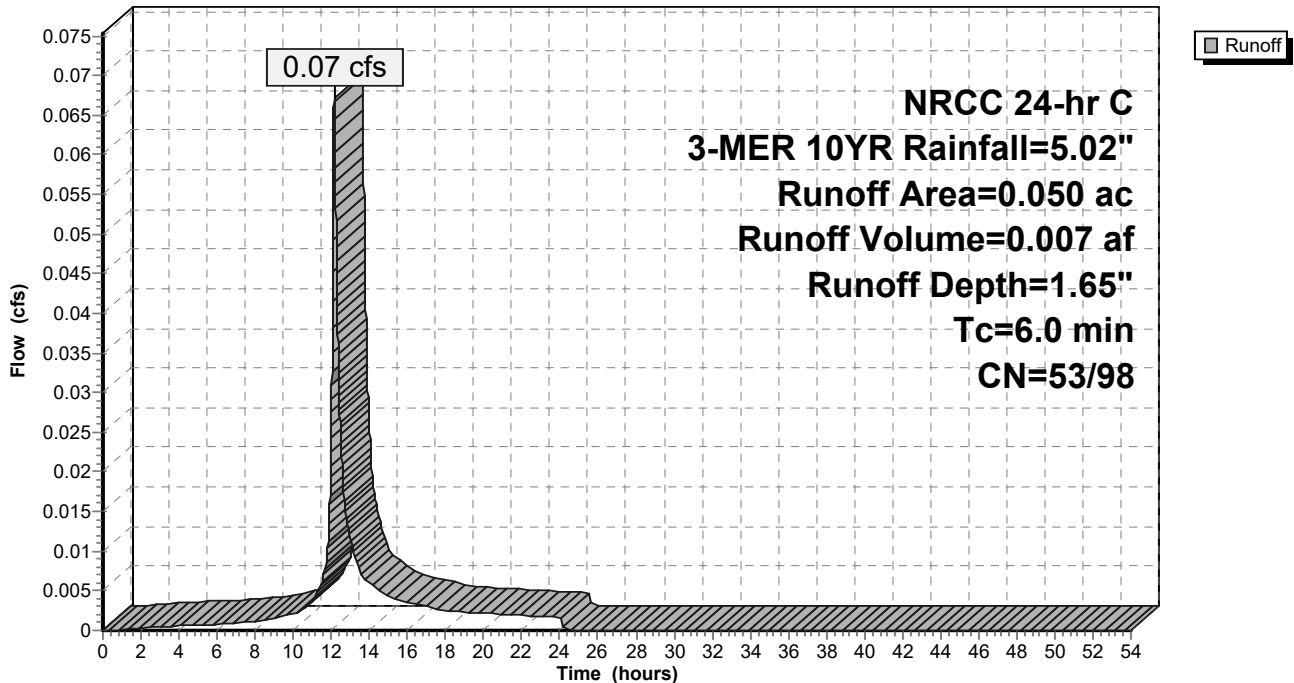
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 3-MER 10YR Rainfall=5.02"

Area (ac)	CN	Description
* 0.006	98	Sidewalks, HSG B
0.025	61	>75% Grass cover, Good, HSG B
* 0.004	98	Sidewalks, HSG A
0.015	39	>75% Grass cover, Good, HSG A
0.050	62	Weighted Average
0.040	53	80.00% Pervious Area
0.010	98	20.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PC-3: PC-3**

Hydrograph



**Summary for Subcatchment PC-4-ROW: PC-4-ROW**

Runoff = 0.22 cfs @ 12.14 hrs, Volume= 0.022 af, Depth= 3.73"

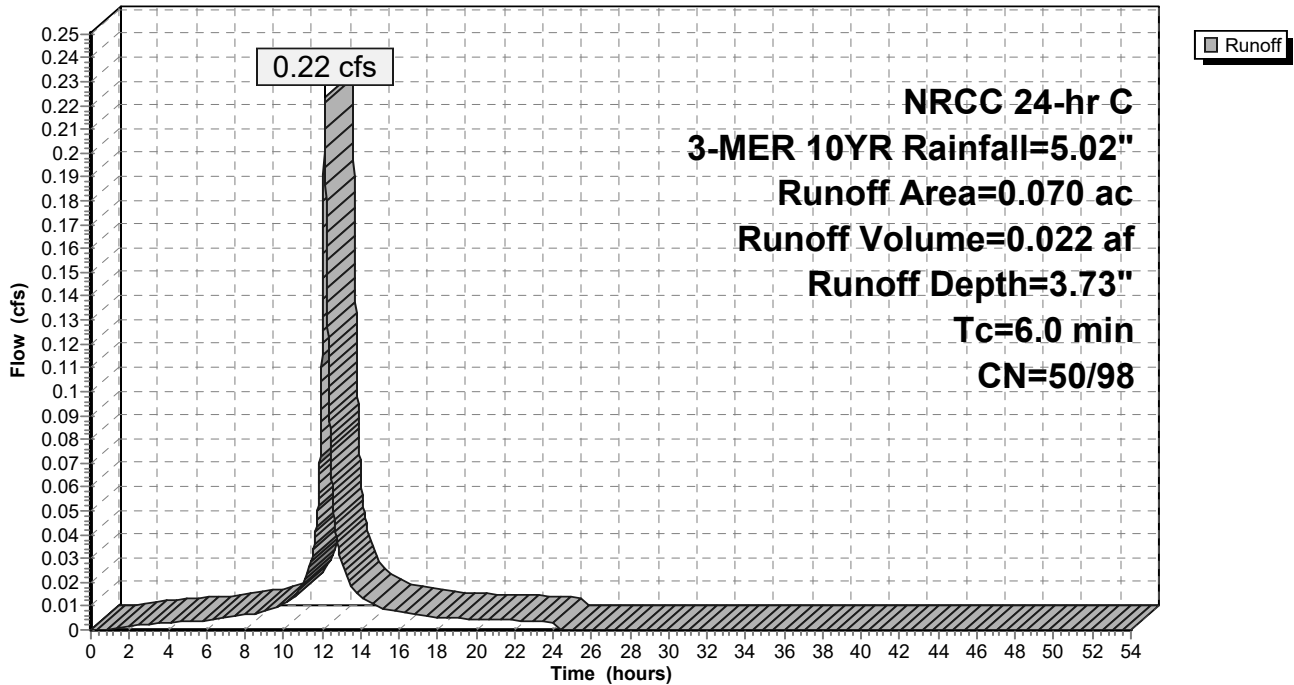
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 3-MER 10YR Rainfall=5.02"

Area (ac)	CN	Description
0.009	61	>75% Grass cover, Good, HSG B
0.009	39	>75% Grass cover, Good, HSG A
0.052	98	Paved parking, HSG B
0.070	86	Weighted Average
0.018	50	25.71% Pervious Area
0.052	98	74.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PC-4-ROW: PC-4-ROW**

Hydrograph



**Summary for Pond BASIN C: BASIN C**

Inflow Area = 0.430 ac, 41.40% Impervious, Inflow Depth = 4.25" for 3-MER 10YR event  
 Inflow = 1.58 cfs @ 12.14 hrs, Volume= 0.152 af  
 Outflow = 0.20 cfs @ 12.99 hrs, Volume= 0.152 af, Atten= 87%, Lag= 51.2 min  
 Primary = 0.20 cfs @ 12.99 hrs, Volume= 0.152 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs  
 Peak Elev= 93.62' @ 12.99 hrs Surf.Area= 0.075 ac Storage= 0.060 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)  
 Center-of-Mass det. time= 181.5 min ( 937.0 - 755.5 )

Volume	Invert	Avail.Storage	Storage Description
#1A	91.00'	0.000 af	<b>25.00'W x 131.00'L x 5.00'H Field A</b> 0.376 af Overall - 0.139 af Embedded = 0.237 af x 0.0% Voids
#2A	91.50'	0.111 af	<b>ADS N-12 42" x 24 Inside #1</b> Inside= 41.1"W x 41.1"H => 9.20 sf x 20.00'L = 184.0 cf Outside= 48.0"W x 48.0"H => 11.55 sf x 20.00'L = 231.0 cf 24 Chambers in 4 Rows 22.00' Header x 9.20 sf x 2 = 404.7 cf Inside
		0.111 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	91.50'	<b>15.0" Round Culvert</b> L= 25.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 91.50' / 91.38' S= 0.0048 1' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	91.50'	<b>Reg-U-Flo SH 3.0-in</b>
#3	Device 1	93.15'	<b>2.5" Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#4	Primary	93.75'	<b>4.0" Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#5	Device 1	94.75'	<b>4.0' long Sharp-Crested Rectangular Weir</b> 2 End Contraction(s)

**Primary OutFlow** Max=0.20 cfs @ 12.99 hrs HW=93.62' TW=0.00' (Dynamic Tailwater)

- 1=Culvert (Passes 0.20 cfs of 7.34 cfs potential flow)
- 2=Reg-U-Flo SH 3.0-in (Custom Controls 0.10 cfs)
- 3=Orifice/Grate (Orifice Controls 0.10 cfs @ 2.91 fps)
- 5=Sharp-Crested Rectangular Weir ( Controls 0.00 cfs)
- 4=Orifice/Grate ( Controls 0.00 cfs)

**Pond BASIN C: BASIN C - Chamber Wizard Field A**

**Chamber Model = ADS N-12 42" (ADS N-12® Pipe)**

Inside= 41.1"W x 41.1"H => 9.20 sf x 20.00'L = 184.0 cf

Outside= 48.0"W x 48.0"H => 11.55 sf x 20.00'L = 231.0 cf

48.0" Wide + 24.0" Spacing = 72.0" C-C Row Spacing

6 Chambers/Row x 20.00' Long +4.00' Header x 2 = 128.00' Row Length +18.0" End Stone x 2 = 131.00' Base Length

4 Rows x 48.0" Wide + 24.0" Spacing x 3 + 18.0" Side Stone x 2 = 25.00' Base Width

6.0" Stone Base + 48.0" Chamber Height + 6.0" Stone Cover = 5.00' Field Height

24 Chambers x 184.0 cf + 22.00' Header x 9.20 sf x 2 = 4,820.7 cf Chamber Storage

24 Chambers x 231.0 cf + 22.00' Header x 11.55 sf x 2 = 6,052.9 cf Displacement

16,370.1 cf Field - 6,052.9 cf Chambers = 10,317.2 cf Stone x 0.0% Voids = 0.0 cf Stone Storage

Chamber Storage = 4,820.7 cf = 0.111 af

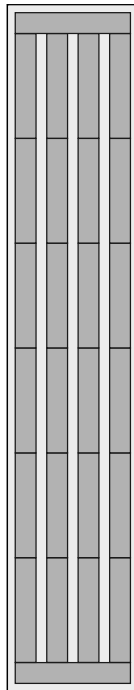
Overall Storage Efficiency = 29.4%

Overall System Size = 131.00' x 25.00' x 5.00'

24 Chambers

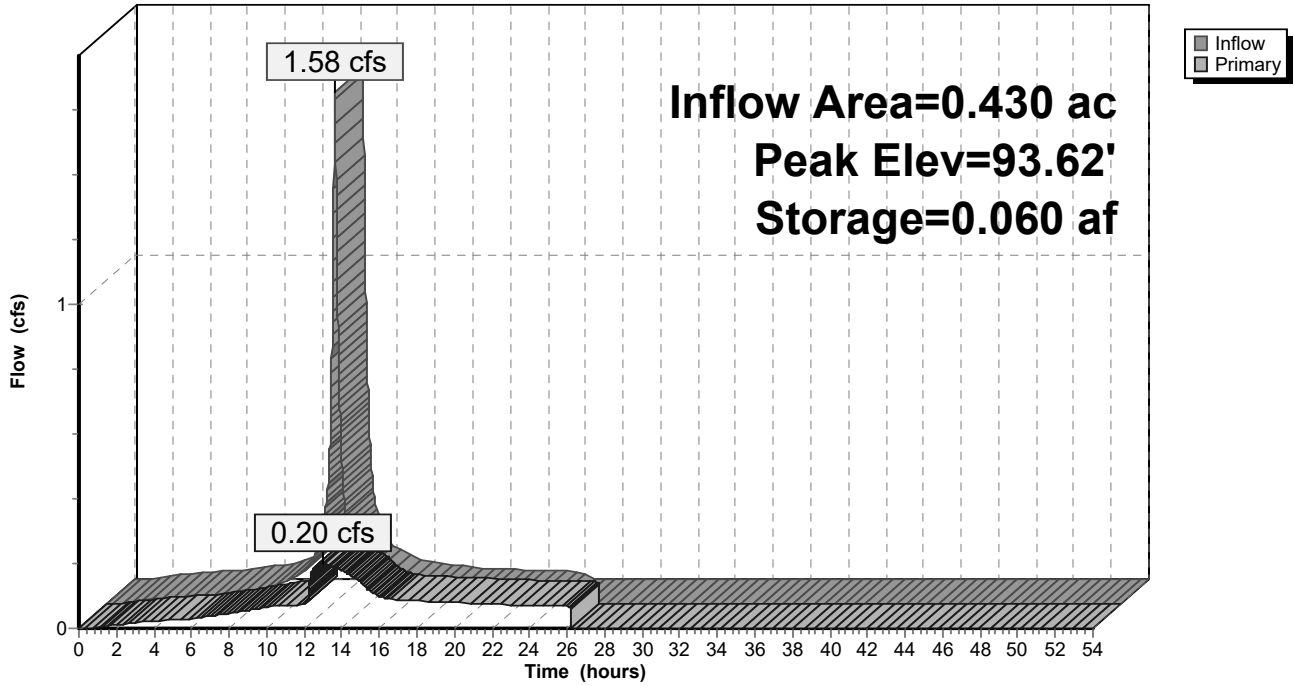
606.3 cy Field

382.1 cy Stone



### Pond BASIN C: BASIN C

Hydrograph





**Summary for Pond PAVE: POROUS PAVEMENT**

[42] Hint: Gap in defined storage above volume #1 at 97.50'

[44] Hint: Outlet device #2 is below defined storage

Inflow Area = 0.230 ac, 77.39% Impervious, Inflow Depth = 3.79" for 3-MER 10YR event  
 Inflow = 0.74 cfs @ 12.14 hrs, Volume= 0.073 af  
 Outflow = 0.74 cfs @ 12.14 hrs, Volume= 0.073 af, Atten= 0%, Lag= 0.0 min  
 Primary = 0.74 cfs @ 12.14 hrs, Volume= 0.073 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs  
 Peak Elev= 96.00' @ 12.14 hrs Surf.Area= 0.016 ac Storage= 0.000 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)  
 Center-of-Mass det. time= 0.0 min ( 758.3 - 758.3 )

Volume	Invert	Avail.Storage	Storage Description
#1	96.00'	0.010 af	<b>Porous Pavement - East (Prismatic)</b> Listed below (Recalc) 0.024 af Overall x 40.0% Voids
#2	98.50'	0.014 af	<b>Porous Pavement - West (Prismatic)</b> Listed below (Recalc) 0.034 af Overall x 40.0% Voids
		0.023 af	Total Available Storage

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
96.00	0.016	0.000	0.000
97.50	0.016	0.024	0.024

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
98.50	0.023	0.000	0.000
100.00	0.023	0.034	0.034

Device	Routing	Invert	Outlet Devices
#1	Primary	93.00'	<b>15.0" Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#2	Device 1	93.00'	<b>5.0" Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads

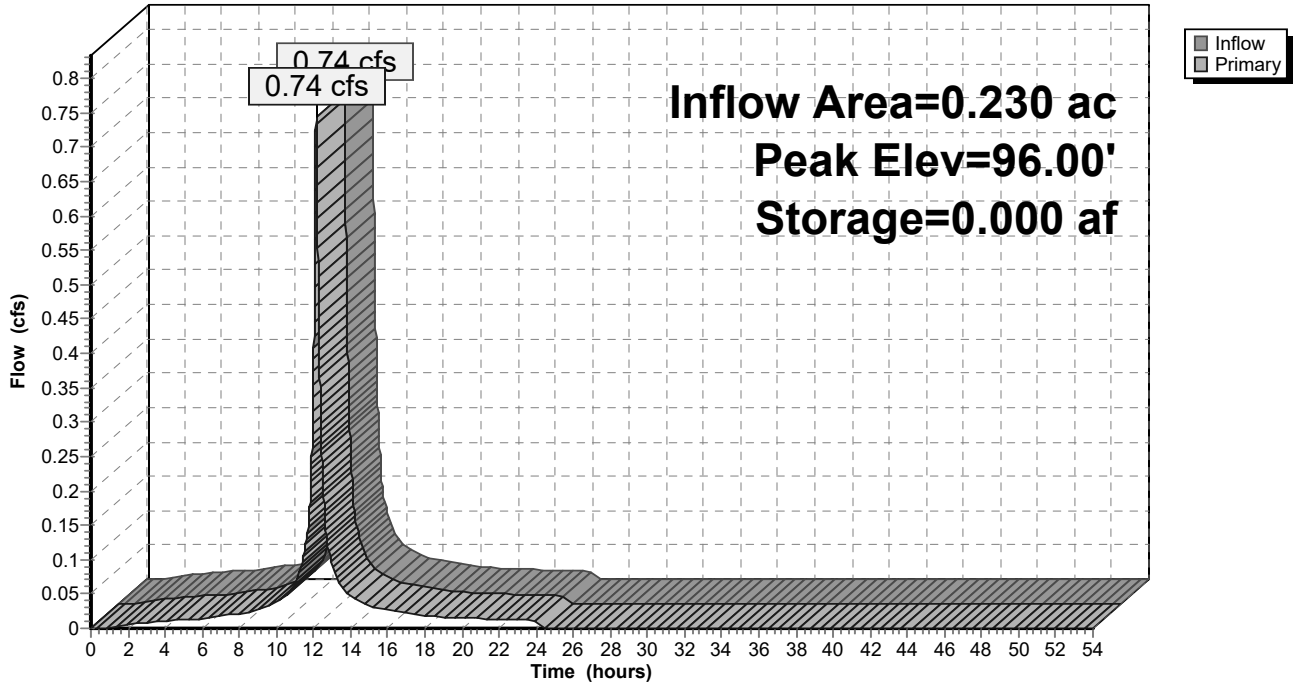
**Primary OutFlow** Max=1.10 cfs @ 12.14 hrs HW=96.00' TW=92.98' (Dynamic Tailwater)

↑1=Orifice/Grate (Passes 1.10 cfs of 9.11 cfs potential flow)

↑2=Orifice/Grate (Orifice Controls 1.10 cfs @ 8.04 fps)

### Pond PAVE: POROUS PAVEMENT

Hydrograph



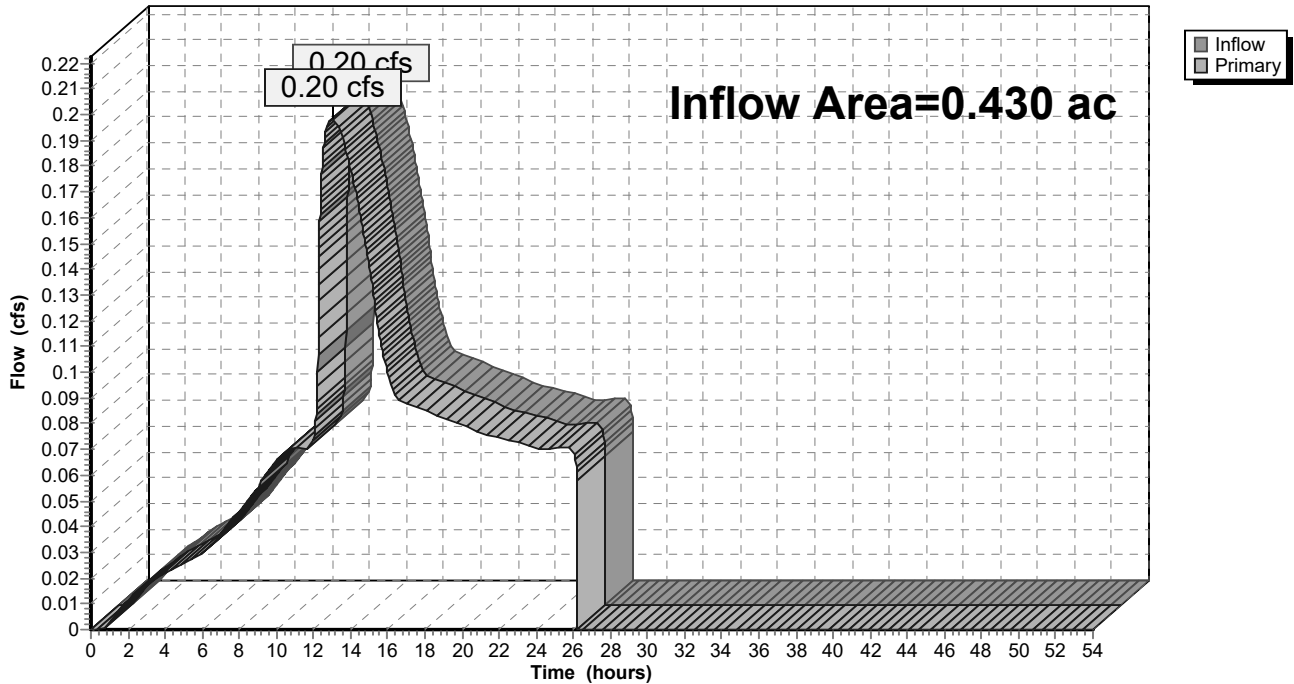
### Summary for Link POA-C1\*: POA-C1 (ROCKY BROOK)

Inflow Area = 0.430 ac, 41.40% Impervious, Inflow Depth = 4.25" for 3-MER 10YR event  
Inflow = 0.20 cfs @ 12.99 hrs, Volume= 0.152 af  
Primary = 0.20 cfs @ 12.99 hrs, Volume= 0.152 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-C1\*: POA-C1 (ROCKY BROOK)

Hydrograph



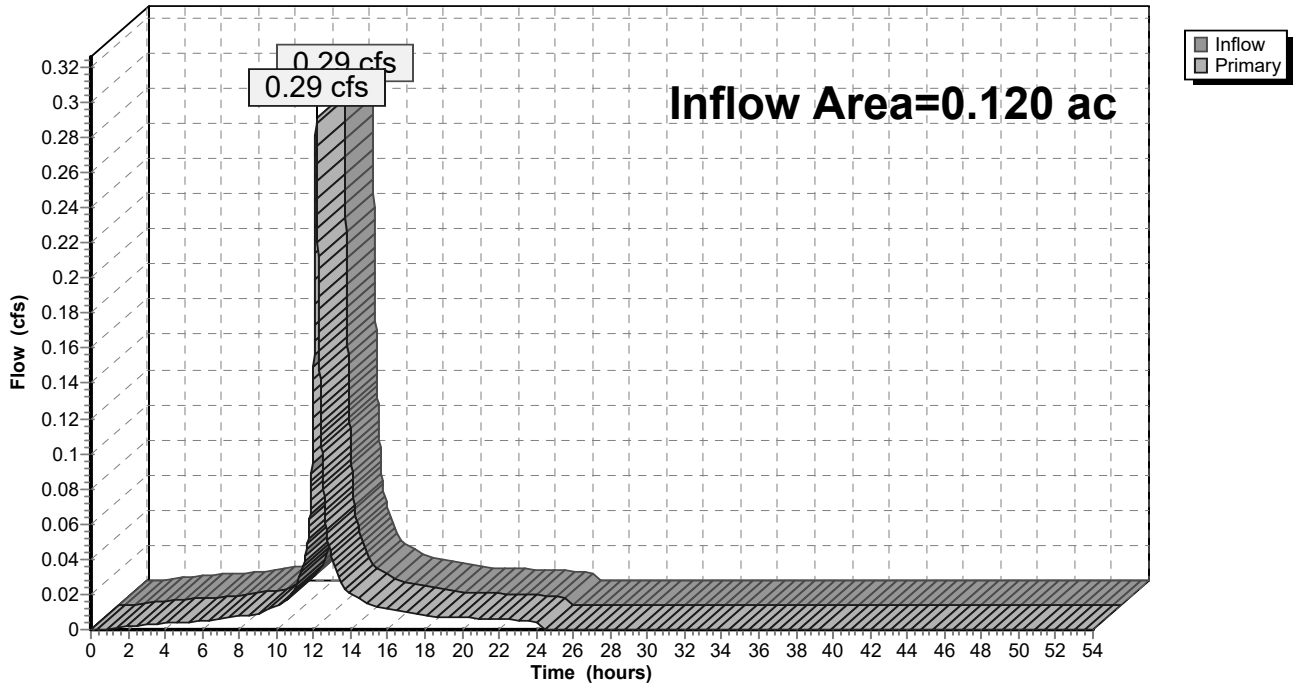
### Summary for Link POA-C2\*: POA-C2 (BANK STREET)

Inflow Area = 0.120 ac, 51.67% Impervious, Inflow Depth = 2.87" for 3-MER 10YR event  
Inflow = 0.29 cfs @ 12.14 hrs, Volume= 0.029 af  
Primary = 0.29 cfs @ 12.14 hrs, Volume= 0.029 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-C2\*: POA-C2 (BANK STREET)

Hydrograph



Time span=0.00-54.00 hrs, dt=0.01 hrs, 5401 points  
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious  
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

<b>Subcatchment PC-1: PC-1</b>	Runoff Area=0.200 ac 0.00% Impervious Runoff Depth=5.96" Tc=6.0 min CN=98/0 Runoff=1.03 cfs 0.099 af
<b>Subcatchment PC-2: PC-2</b>	Runoff Area=0.230 ac 77.39% Impervious Runoff Depth=4.80" Tc=6.0 min CN=44/98 Runoff=0.94 cfs 0.092 af
<b>Subcatchment PC-3: PC-3</b>	Runoff Area=0.050 ac 20.00% Impervious Runoff Depth=2.37" Tc=6.0 min CN=53/98 Runoff=0.10 cfs 0.010 af
<b>Subcatchment PC-4-ROW: PC-4-ROW</b>	Runoff Area=0.070 ac 74.29% Impervious Runoff Depth=4.75" Tc=6.0 min CN=50/98 Runoff=0.29 cfs 0.028 af
<b>Pond BASIN C: BASIN C</b>	Peak Elev=93.97' Storage=0.075 af Inflow=1.97 cfs 0.191 af Outflow=0.35 cfs 0.191 af
<b>Pond PAVE: POROUS PAVEMENT</b>	Peak Elev=96.00' Storage=0.000 af Inflow=0.94 cfs 0.092 af Outflow=0.94 cfs 0.092 af
<b>Link POA-C1*: POA-C1 (ROCKY BROOK)</b>	Inflow=0.35 cfs 0.191 af Primary=0.35 cfs 0.191 af
<b>Link POA-C2*: POA-C2 (BANK STREET)</b>	Inflow=0.39 cfs 0.038 af Primary=0.39 cfs 0.038 af

**Total Runoff Area = 0.550 ac Runoff Volume = 0.229 af Average Runoff Depth = 4.99"**  
**56.36% Pervious = 0.310 ac 43.64% Impervious = 0.240 ac**

**Summary for Subcatchment PC-1: PC-1**

Runoff = 1.03 cfs @ 12.14 hrs, Volume= 0.099 af, Depth= 5.96"

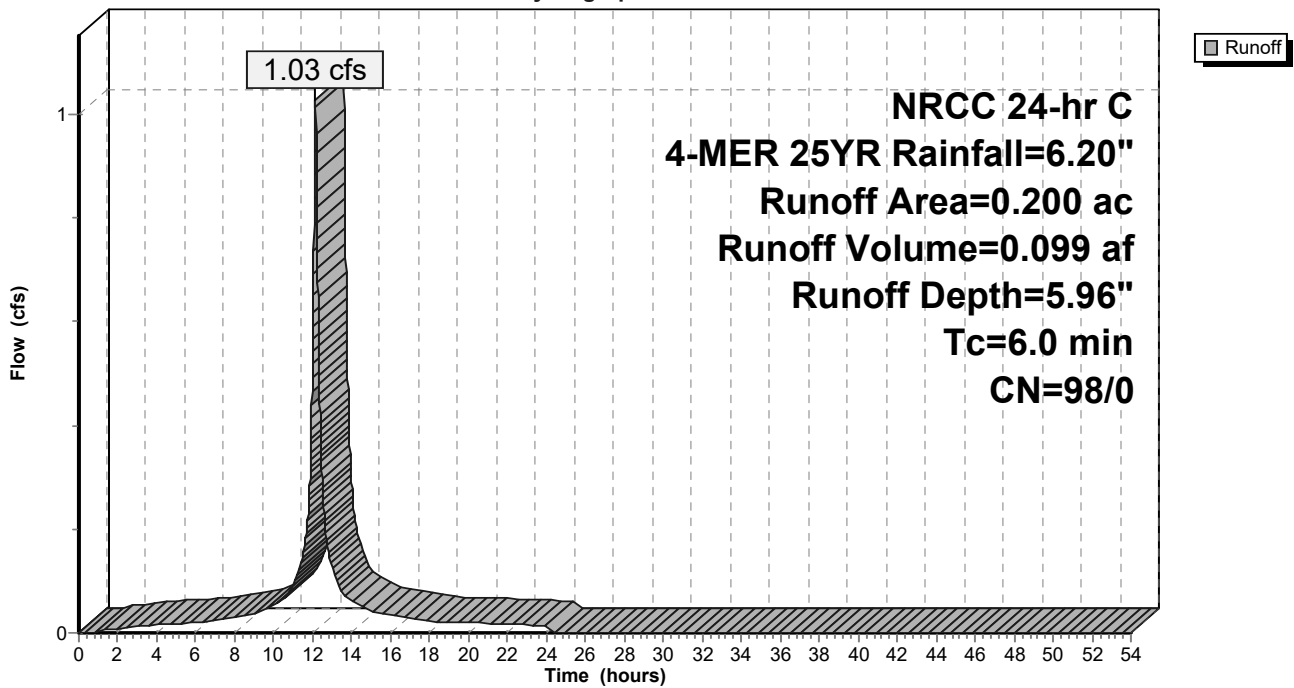
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 4-MER 25YR Rainfall=6.20"

Area (ac)	CN	Description
0.131	98	Unconnected roofs, HSG A
0.069	98	Unconnected roofs, HSG B
0.200	98	Weighted Average
0.200	98	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PC-1: PC-1**

Hydrograph



**Summary for Subcatchment PC-2: PC-2**

Runoff = 0.94 cfs @ 12.14 hrs, Volume= 0.092 af, Depth= 4.80"

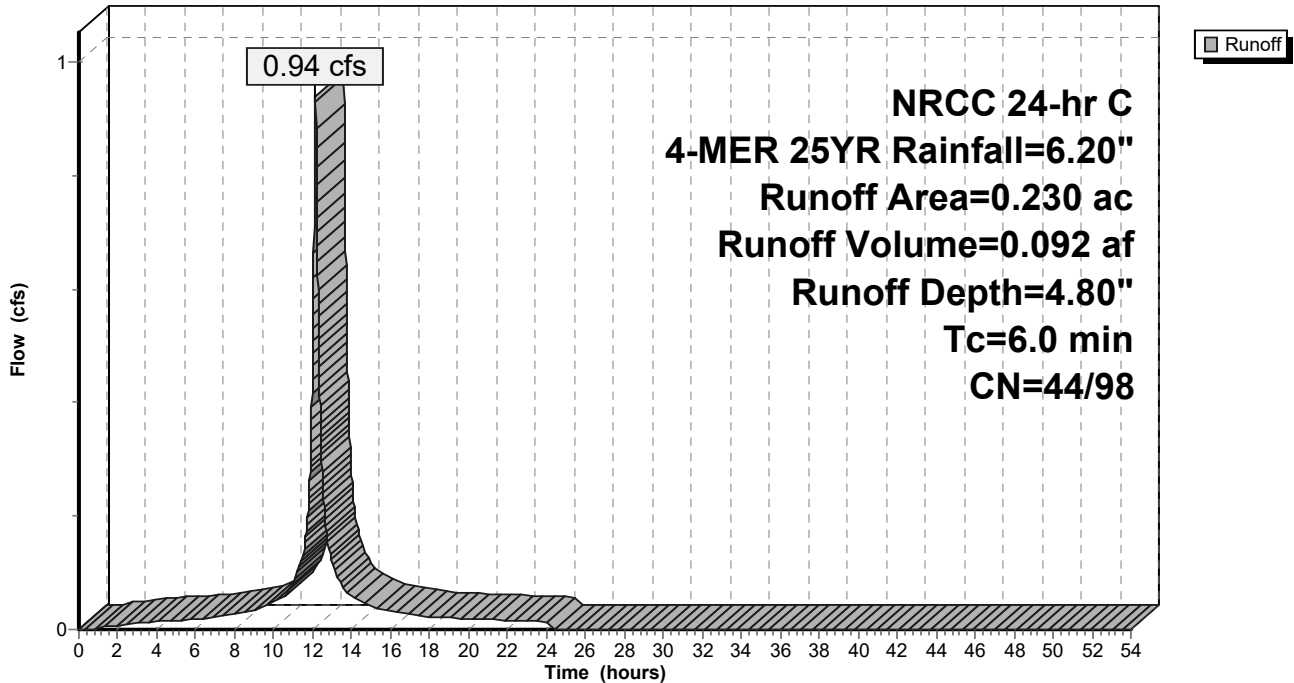
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 4-MER 25YR Rainfall=6.20"

Area (ac)	CN	Description
* 0.018	98	Sidewalks, HSG A
0.101	98	Paved parking, HSG A
0.040	39	>75% Grass cover, Good, HSG A
* 0.005	98	Sidewalks, HSG B
0.054	98	Paved parking, HSG B
0.012	61	>75% Grass cover, Good, HSG B
0.230	86	Weighted Average
0.052	44	22.61% Pervious Area
0.178	98	77.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PC-2: PC-2**

Hydrograph



**Summary for Subcatchment PC-3: PC-3**

Runoff = 0.10 cfs @ 12.15 hrs, Volume= 0.010 af, Depth= 2.37"

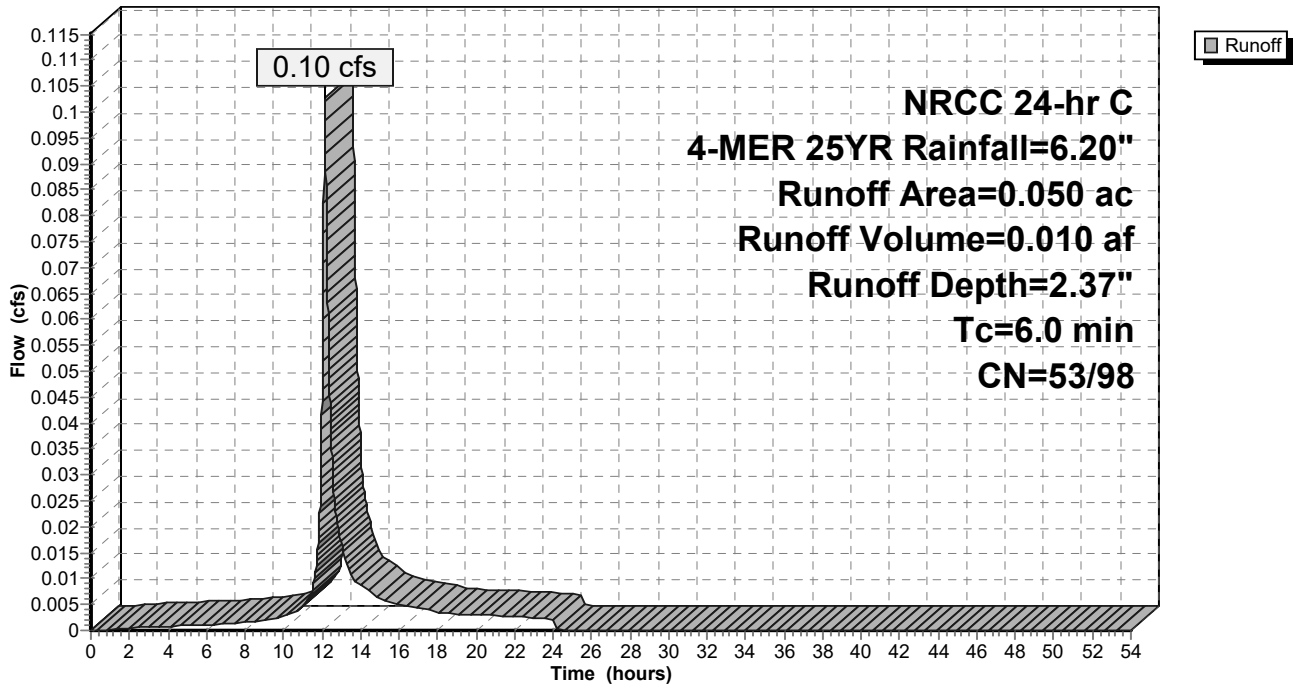
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 4-MER 25YR Rainfall=6.20"

Area (ac)	CN	Description
* 0.006	98	Sidewalks, HSG B
0.025	61	>75% Grass cover, Good, HSG B
* 0.004	98	Sidewalks, HSG A
0.015	39	>75% Grass cover, Good, HSG A
0.050	62	Weighted Average
0.040	53	80.00% Pervious Area
0.010	98	20.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PC-3: PC-3**

Hydrograph





**Summary for Subcatchment PC-4-ROW: PC-4-ROW**

Runoff = 0.29 cfs @ 12.14 hrs, Volume= 0.028 af, Depth= 4.75"

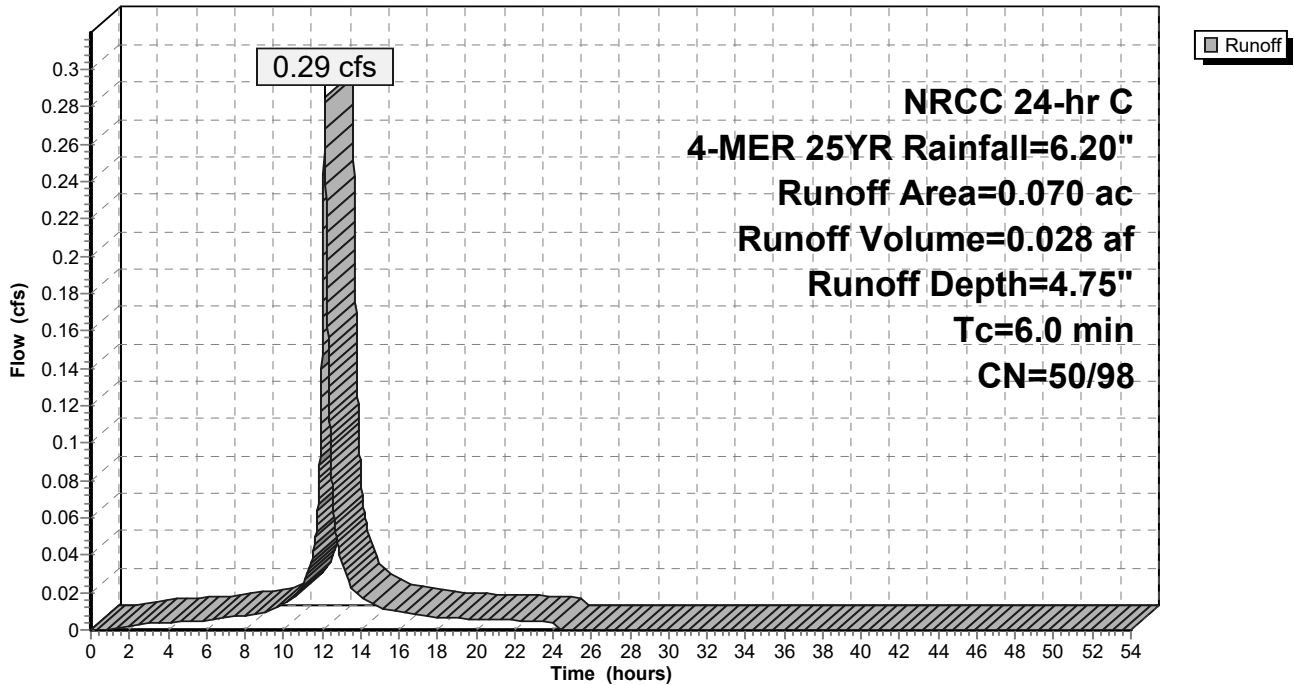
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 4-MER 25YR Rainfall=6.20"

Area (ac)	CN	Description
0.009	61	>75% Grass cover, Good, HSG B
0.009	39	>75% Grass cover, Good, HSG A
0.052	98	Paved parking, HSG B
0.070	86	Weighted Average
0.018	50	25.71% Pervious Area
0.052	98	74.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PC-4-ROW: PC-4-ROW**

Hydrograph



**Summary for Pond BASIN C: BASIN C**

Inflow Area = 0.430 ac, 41.40% Impervious, Inflow Depth = 5.34" for 4-MER 25YR event  
 Inflow = 1.97 cfs @ 12.14 hrs, Volume= 0.191 af  
 Outflow = 0.35 cfs @ 12.70 hrs, Volume= 0.191 af, Atten= 82%, Lag= 33.6 min  
 Primary = 0.35 cfs @ 12.70 hrs, Volume= 0.191 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs  
 Peak Elev= 93.97' @ 12.70 hrs Surf.Area= 0.075 ac Storage= 0.075 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)  
 Center-of-Mass det. time= 178.3 min ( 931.2 - 752.9 )

Volume	Invert	Avail.Storage	Storage Description
#1A	91.00'	0.000 af	<b>25.00'W x 131.00'L x 5.00'H Field A</b> 0.376 af Overall - 0.139 af Embedded = 0.237 af x 0.0% Voids
#2A	91.50'	0.111 af	<b>ADS N-12 42" x 24 Inside #1</b> Inside= 41.1"W x 41.1"H => 9.20 sf x 20.00'L = 184.0 cf Outside= 48.0"W x 48.0"H => 11.55 sf x 20.00'L = 231.0 cf 24 Chambers in 4 Rows 22.00' Header x 9.20 sf x 2 = 404.7 cf Inside
		0.111 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	91.50'	<b>15.0" Round Culvert</b> L= 25.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 91.50' / 91.38' S= 0.0048 1' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	91.50'	<b>Reg-U-Flo SH 3.0-in</b>
#3	Device 1	93.15'	<b>2.5" Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#4	Primary	93.75'	<b>4.0" Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#5	Device 1	94.75'	<b>4.0' long Sharp-Crested Rectangular Weir</b> 2 End Contraction(s)

**Primary OutFlow** Max=0.35 cfs @ 12.70 hrs HW=93.97' TW=0.00' (Dynamic Tailwater)

- 1=Culvert (Passes 0.25 cfs of 8.55 cfs potential flow)
- 2=Reg-U-Flo SH 3.0-in (Custom Controls 0.11 cfs)
- 3=Orifice/Grate (Orifice Controls 0.14 cfs @ 4.09 fps)
- 5=Sharp-Crested Rectangular Weir ( Controls 0.00 cfs)
- 4=Orifice/Grate (Orifice Controls 0.10 cfs @ 1.61 fps)

**Pond BASIN C: BASIN C - Chamber Wizard Field A**

**Chamber Model = ADS N-12 42" (ADS N-12® Pipe)**

Inside= 41.1"W x 41.1"H => 9.20 sf x 20.00'L = 184.0 cf

Outside= 48.0"W x 48.0"H => 11.55 sf x 20.00'L = 231.0 cf

48.0" Wide + 24.0" Spacing = 72.0" C-C Row Spacing

6 Chambers/Row x 20.00' Long +4.00' Header x 2 = 128.00' Row Length +18.0" End Stone x 2 = 131.00' Base Length

4 Rows x 48.0" Wide + 24.0" Spacing x 3 + 18.0" Side Stone x 2 = 25.00' Base Width

6.0" Stone Base + 48.0" Chamber Height + 6.0" Stone Cover = 5.00' Field Height

24 Chambers x 184.0 cf + 22.00' Header x 9.20 sf x 2 = 4,820.7 cf Chamber Storage

24 Chambers x 231.0 cf + 22.00' Header x 11.55 sf x 2 = 6,052.9 cf Displacement

16,370.1 cf Field - 6,052.9 cf Chambers = 10,317.2 cf Stone x 0.0% Voids = 0.0 cf Stone Storage

Chamber Storage = 4,820.7 cf = 0.111 af

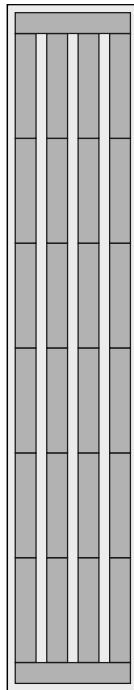
Overall Storage Efficiency = 29.4%

Overall System Size = 131.00' x 25.00' x 5.00'

24 Chambers

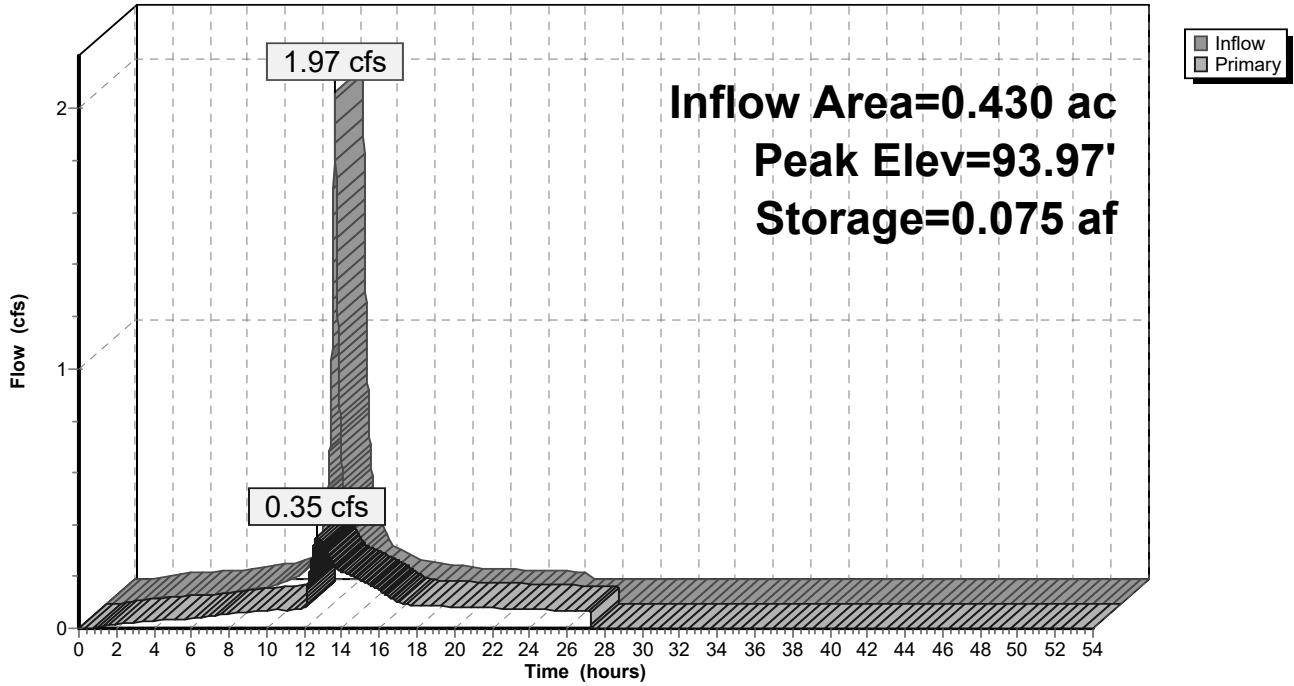
606.3 cy Field

382.1 cy Stone



### Pond BASIN C: BASIN C

Hydrograph



**Summary for Pond PAVE: POROUS PAVEMENT**

[42] Hint: Gap in defined storage above volume #1 at 97.50'

[44] Hint: Outlet device #2 is below defined storage

Inflow Area = 0.230 ac, 77.39% Impervious, Inflow Depth = 4.80" for 4-MER 25YR event  
 Inflow = 0.94 cfs @ 12.14 hrs, Volume= 0.092 af  
 Outflow = 0.94 cfs @ 12.14 hrs, Volume= 0.092 af, Atten= 0%, Lag= 0.0 min  
 Primary = 0.94 cfs @ 12.14 hrs, Volume= 0.092 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs  
 Peak Elev= 96.00' @ 12.14 hrs Surf.Area= 0.016 ac Storage= 0.000 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)  
 Center-of-Mass det. time= 0.0 min ( 756.7 - 756.7 )

Volume	Invert	Avail.Storage	Storage Description
#1	96.00'	0.010 af	<b>Porous Pavement - East (Prismatic)</b> Listed below (Recalc) 0.024 af Overall x 40.0% Voids
#2	98.50'	0.014 af	<b>Porous Pavement - West (Prismatic)</b> Listed below (Recalc) 0.034 af Overall x 40.0% Voids
		0.023 af	Total Available Storage

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
96.00	0.016	0.000	0.000
97.50	0.016	0.024	0.024

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
98.50	0.023	0.000	0.000
100.00	0.023	0.034	0.034

Device	Routing	Invert	Outlet Devices
#1	Primary	93.00'	<b>15.0" Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#2	Device 1	93.00'	<b>5.0" Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads

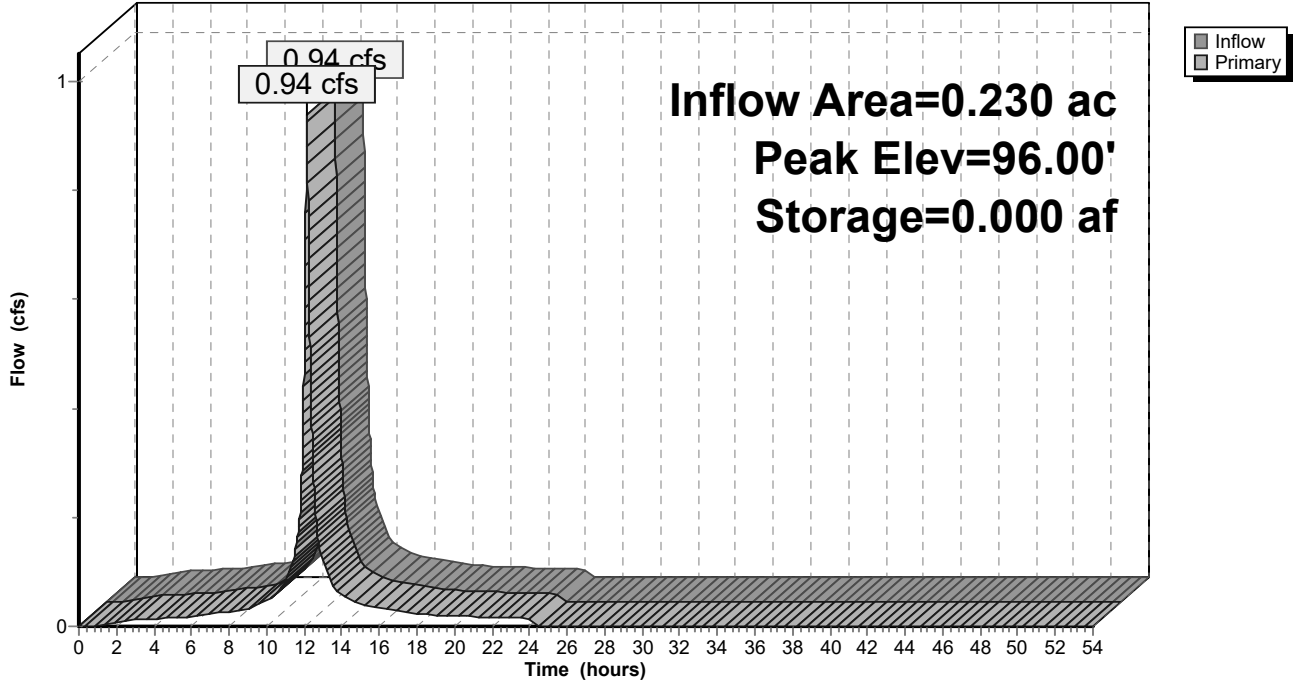
**Primary OutFlow** Max=1.08 cfs @ 12.14 hrs HW=96.00' TW=93.28' (Dynamic Tailwater)

↑1=Orifice/Grate (Passes 1.08 cfs of 9.11 cfs potential flow)

↑2=Orifice/Grate (Orifice Controls 1.08 cfs @ 7.94 fps)

### Pond PAVE: POROUS PAVEMENT

Hydrograph



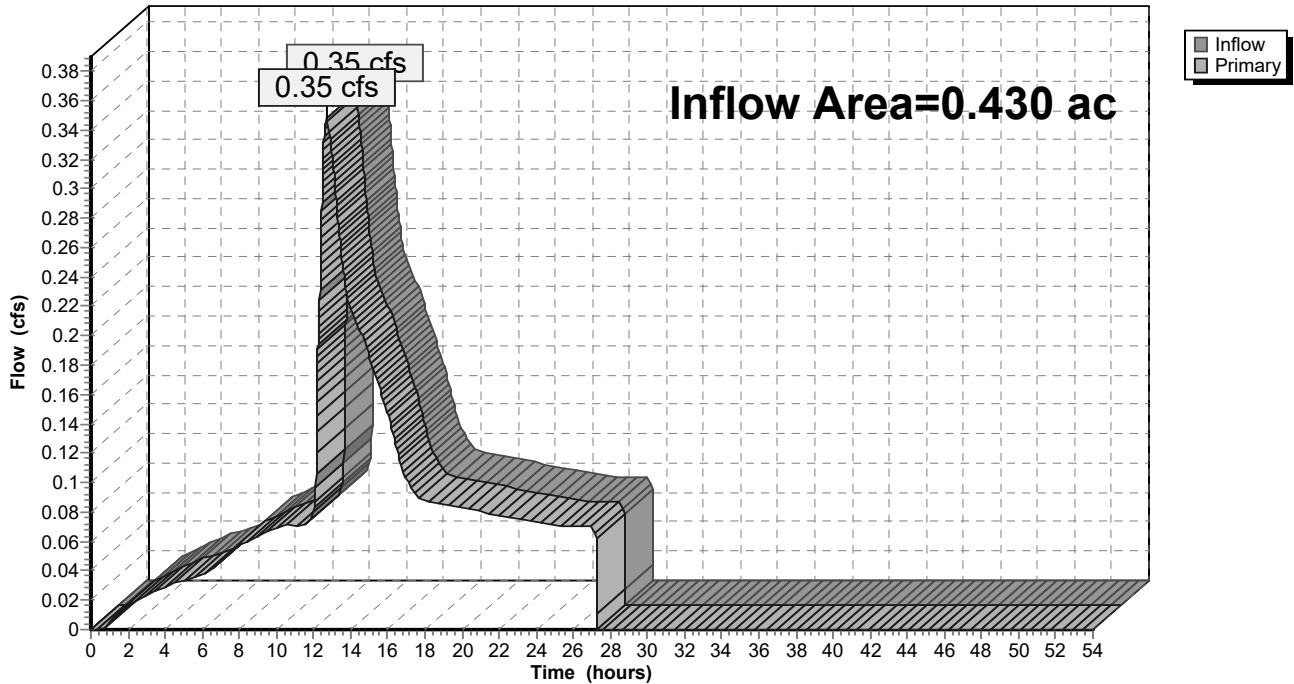
### Summary for Link POA-C1\*: POA-C1 (ROCKY BROOK)

Inflow Area = 0.430 ac, 41.40% Impervious, Inflow Depth = 5.34" for 4-MER 25YR event  
Inflow = 0.35 cfs @ 12.70 hrs, Volume= 0.191 af  
Primary = 0.35 cfs @ 12.70 hrs, Volume= 0.191 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-C1\*: POA-C1 (ROCKY BROOK)

Hydrograph



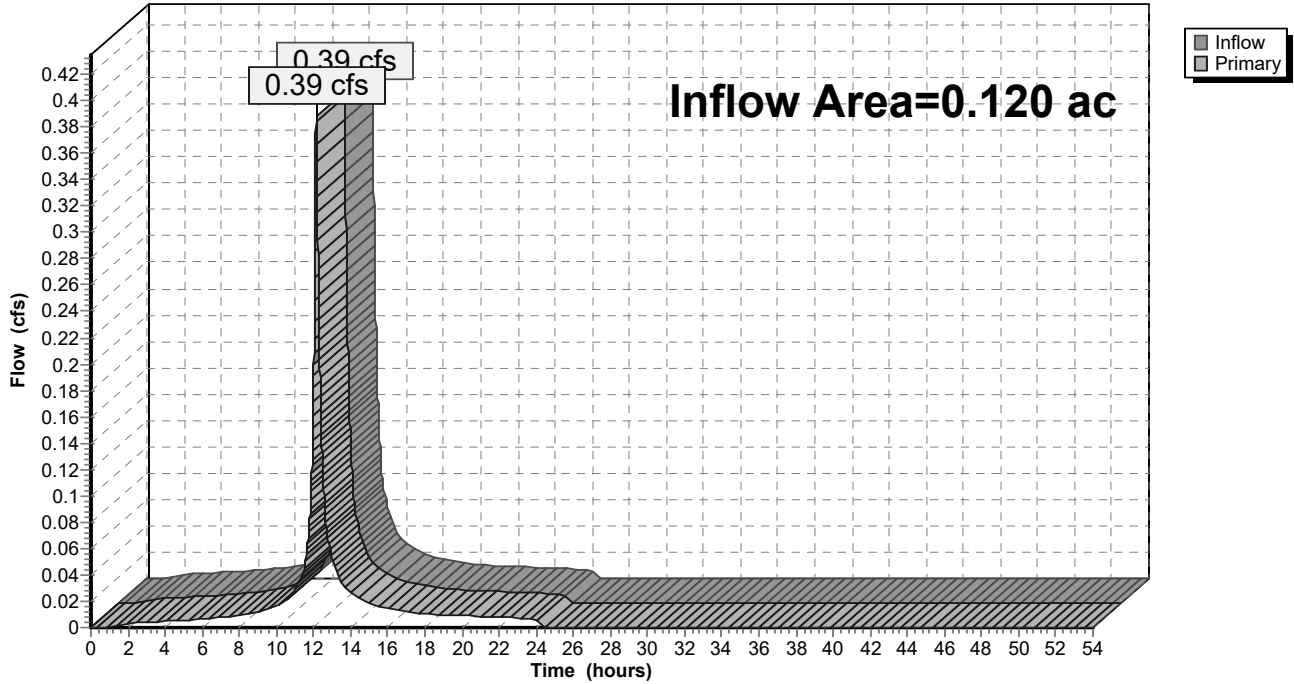
### Summary for Link POA-C2\*: POA-C2 (BANK STREET)

Inflow Area = 0.120 ac, 51.67% Impervious, Inflow Depth = 3.76" for 4-MER 25YR event  
Inflow = 0.39 cfs @ 12.14 hrs, Volume= 0.038 af  
Primary = 0.39 cfs @ 12.14 hrs, Volume= 0.038 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-C2\*: POA-C2 (BANK STREET)

Hydrograph





Time span=0.00-54.00 hrs, dt=0.01 hrs, 5401 points  
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious  
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

<b>Subcatchment PC-1: PC-1</b>	Runoff Area=0.200 ac 0.00% Impervious Runoff Depth=8.11" Tc=6.0 min CN=98/0 Runoff=1.39 cfs 0.135 af
<b>Subcatchment PC-2: PC-2</b>	Runoff Area=0.230 ac 77.39% Impervious Runoff Depth=6.69" Tc=6.0 min CN=44/98 Runoff=1.31 cfs 0.128 af
<b>Subcatchment PC-3: PC-3</b>	Runoff Area=0.050 ac 20.00% Impervious Runoff Depth=3.86" Tc=6.0 min CN=53/98 Runoff=0.18 cfs 0.016 af
<b>Subcatchment PC-4-ROW: PC-4-ROW</b>	Runoff Area=0.070 ac 74.29% Impervious Runoff Depth=6.66" Tc=6.0 min CN=50/98 Runoff=0.40 cfs 0.039 af
<b>Pond BASIN C: BASIN C</b>	Peak Elev=94.66' Storage=0.099 af Inflow=2.40 cfs 0.263 af Outflow=0.68 cfs 0.263 af
<b>Pond PAVE: POROUS PAVEMENT</b>	Peak Elev=96.35' Storage=0.002 af Inflow=1.31 cfs 0.128 af Outflow=1.02 cfs 0.128 af
<b>Link POA-C1*: POA-C1 (ROCKY BROOK)</b>	Inflow=0.68 cfs 0.263 af Primary=0.68 cfs 0.263 af
<b>Link POA-C2*: POA-C2 (BANK STREET)</b>	Inflow=0.58 cfs 0.055 af Primary=0.58 cfs 0.055 af

**Total Runoff Area = 0.550 ac Runoff Volume = 0.318 af Average Runoff Depth = 6.94"**  
**56.36% Pervious = 0.310 ac 43.64% Impervious = 0.240 ac**

**Summary for Subcatchment PC-1: PC-1**

Runoff = 1.39 cfs @ 12.14 hrs, Volume= 0.135 af, Depth= 8.11"

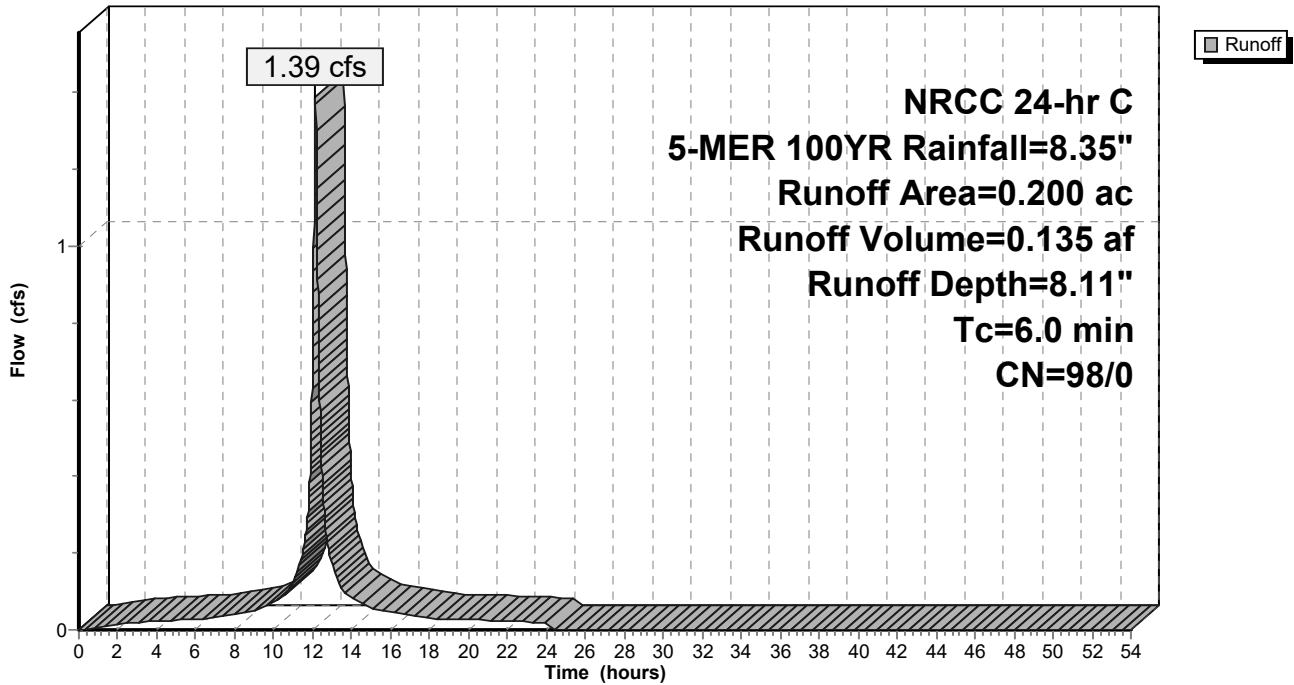
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 5-MER 100YR Rainfall=8.35"

Area (ac)	CN	Description
0.131	98	Unconnected roofs, HSG A
0.069	98	Unconnected roofs, HSG B
0.200	98	Weighted Average
0.200	98	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PC-1: PC-1**

Hydrograph



**Summary for Subcatchment PC-2: PC-2**

Runoff = 1.31 cfs @ 12.14 hrs, Volume= 0.128 af, Depth= 6.69"

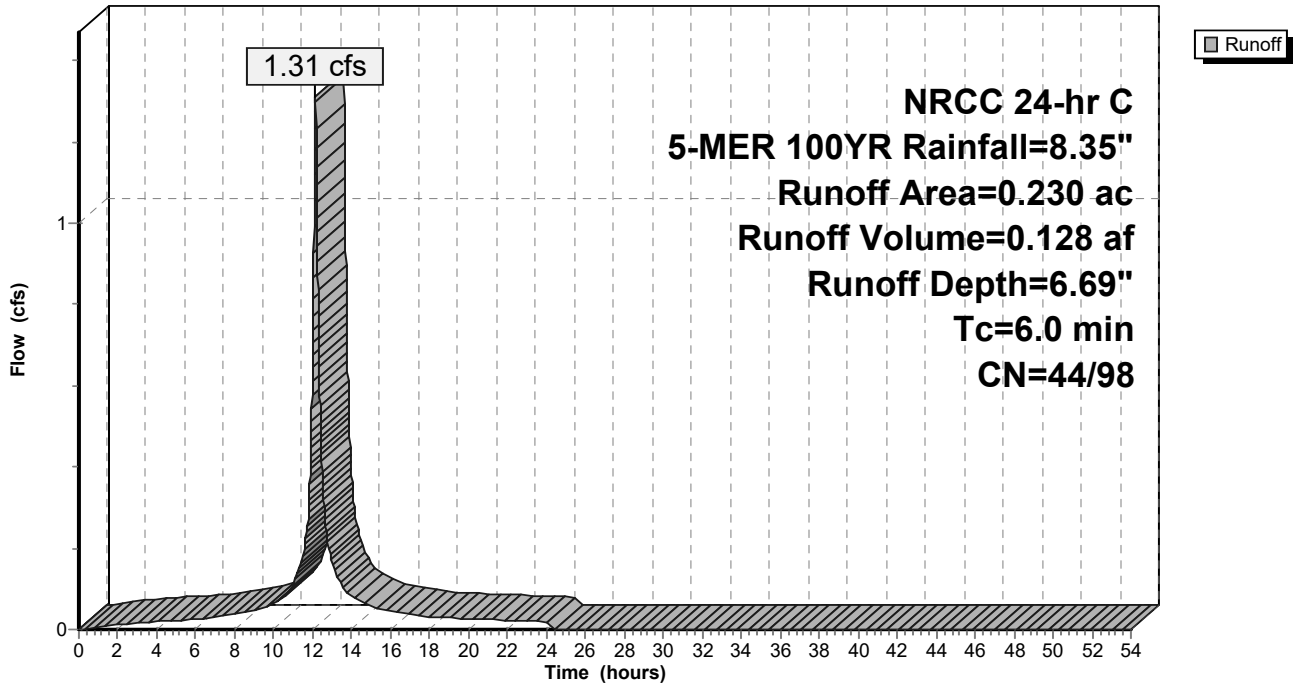
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 5-MER 100YR Rainfall=8.35"

Area (ac)	CN	Description
* 0.018	98	Sidewalks, HSG A
0.101	98	Paved parking, HSG A
0.040	39	>75% Grass cover, Good, HSG A
* 0.005	98	Sidewalks, HSG B
0.054	98	Paved parking, HSG B
0.012	61	>75% Grass cover, Good, HSG B
0.230	86	Weighted Average
0.052	44	22.61% Pervious Area
0.178	98	77.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PC-2: PC-2**

Hydrograph



**Summary for Subcatchment PC-3: PC-3**

Runoff = 0.18 cfs @ 12.14 hrs, Volume= 0.016 af, Depth= 3.86"

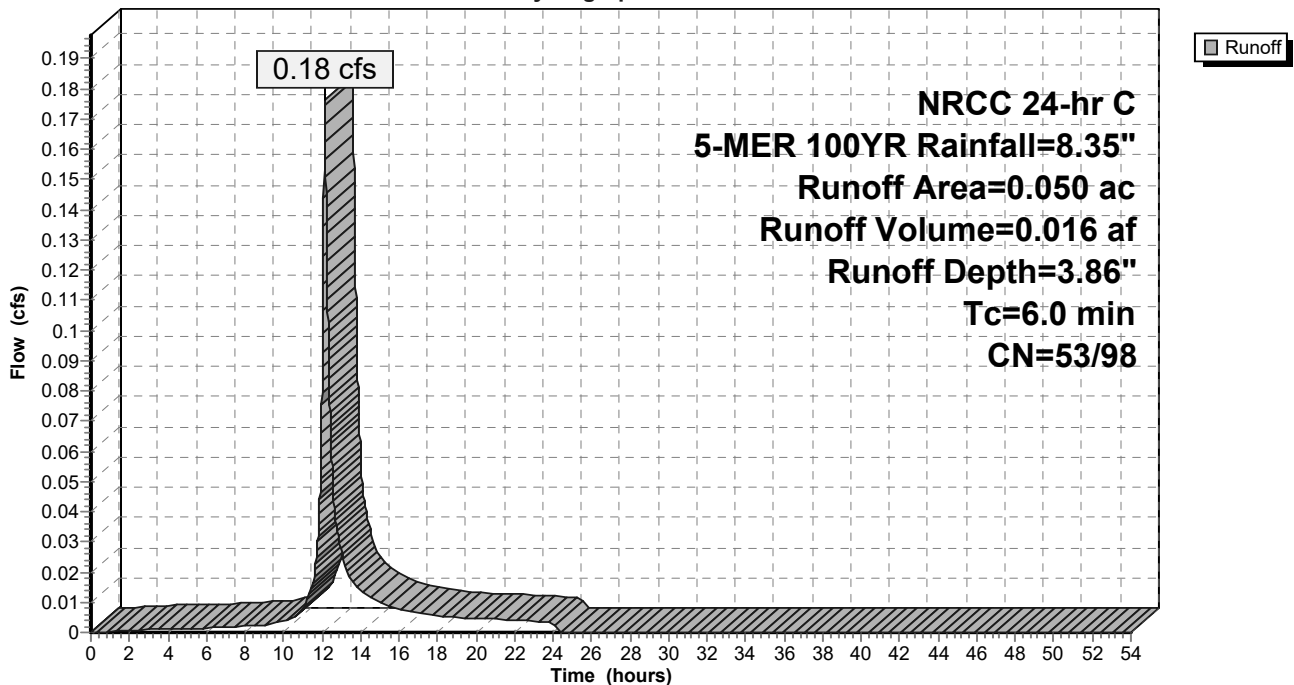
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 5-MER 100YR Rainfall=8.35"

Area (ac)	CN	Description
* 0.006	98	Sidewalks, HSG B
0.025	61	>75% Grass cover, Good, HSG B
* 0.004	98	Sidewalks, HSG A
0.015	39	>75% Grass cover, Good, HSG A
0.050	62	Weighted Average
0.040	53	80.00% Pervious Area
0.010	98	20.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PC-3: PC-3**

Hydrograph



**Summary for Subcatchment PC-4-ROW: PC-4-ROW**

Runoff = 0.40 cfs @ 12.14 hrs, Volume= 0.039 af, Depth= 6.66"

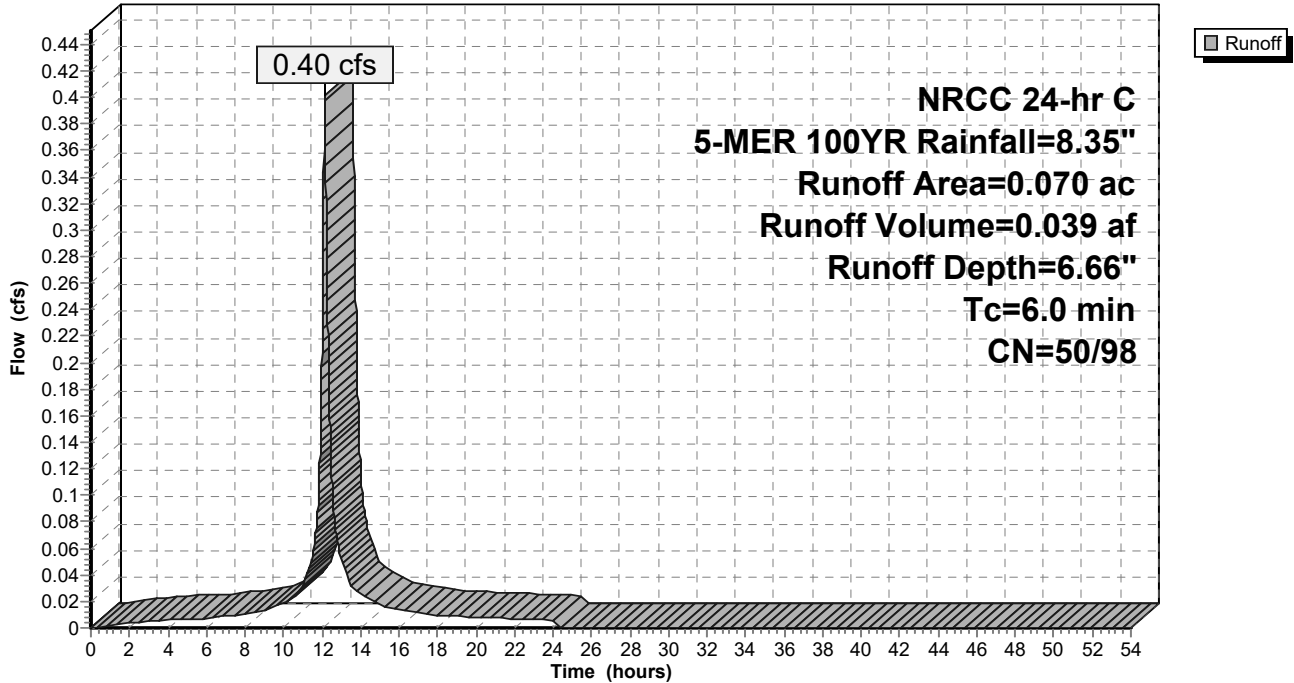
Runoff by SCS TR-20 method, UH=Delmarva, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= NRCC 24-hr C 5-MER 100YR Rainfall=8.35"

Area (ac)	CN	Description
0.009	61	>75% Grass cover, Good, HSG B
0.009	39	>75% Grass cover, Good, HSG A
0.052	98	Paved parking, HSG B
0.070	86	Weighted Average
0.018	50	25.71% Pervious Area
0.052	98	74.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PC-4-ROW: PC-4-ROW**

Hydrograph



**Summary for Pond BASIN C: BASIN C**

Inflow Area = 0.430 ac, 41.40% Impervious, Inflow Depth = 7.35" for 5-MER 100YR event  
 Inflow = 2.40 cfs @ 12.14 hrs, Volume= 0.263 af  
 Outflow = 0.68 cfs @ 12.55 hrs, Volume= 0.263 af, Atten= 72%, Lag= 24.6 min  
 Primary = 0.68 cfs @ 12.55 hrs, Volume= 0.263 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs  
 Peak Elev= 94.66' @ 12.55 hrs Surf.Area= 0.075 ac Storage= 0.099 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)  
 Center-of-Mass det. time= 163.3 min ( 913.3 - 750.1 )

Volume	Invert	Avail.Storage	Storage Description
#1A	91.00'	0.000 af	<b>25.00'W x 131.00'L x 5.00'H Field A</b> 0.376 af Overall - 0.139 af Embedded = 0.237 af x 0.0% Voids
#2A	91.50'	0.111 af	<b>ADS N-12 42" x 24 Inside #1</b> Inside= 41.1"W x 41.1"H => 9.20 sf x 20.00'L = 184.0 cf Outside= 48.0"W x 48.0"H => 11.55 sf x 20.00'L = 231.0 cf 24 Chambers in 4 Rows 22.00' Header x 9.20 sf x 2 = 404.7 cf Inside
		0.111 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	91.50'	<b>15.0" Round Culvert</b> L= 25.0' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 91.50' / 91.38' S= 0.0048 1' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	91.50'	<b>Reg-U-Flo SH 3.0-in</b>
#3	Device 1	93.15'	<b>2.5" Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#4	Primary	93.75'	<b>4.0" Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#5	Device 1	94.75'	<b>4.0' long Sharp-Crested Rectangular Weir</b> 2 End Contraction(s)

**Primary OutFlow** Max=0.68 cfs @ 12.55 hrs HW=94.66' TW=0.00' (Dynamic Tailwater)

- 1=Culvert (Passes 0.32 cfs of 10.51 cfs potential flow)
- 2=Reg-U-Flo SH 3.0-in (Custom Controls 0.12 cfs)
- 3=Orifice/Grate (Orifice Controls 0.19 cfs @ 5.71 fps)
- 5=Sharp-Crested Rectangular Weir ( Controls 0.00 cfs)
- 4=Orifice/Grate (Orifice Controls 0.36 cfs @ 4.15 fps)

**Pond BASIN C: BASIN C - Chamber Wizard Field A**

**Chamber Model = ADS N-12 42" (ADS N-12® Pipe)**

Inside= 41.1"W x 41.1"H => 9.20 sf x 20.00'L = 184.0 cf

Outside= 48.0"W x 48.0"H => 11.55 sf x 20.00'L = 231.0 cf

48.0" Wide + 24.0" Spacing = 72.0" C-C Row Spacing

6 Chambers/Row x 20.00' Long +4.00' Header x 2 = 128.00' Row Length +18.0" End Stone x 2 = 131.00' Base Length

4 Rows x 48.0" Wide + 24.0" Spacing x 3 + 18.0" Side Stone x 2 = 25.00' Base Width

6.0" Stone Base + 48.0" Chamber Height + 6.0" Stone Cover = 5.00' Field Height

24 Chambers x 184.0 cf + 22.00' Header x 9.20 sf x 2 = 4,820.7 cf Chamber Storage

24 Chambers x 231.0 cf + 22.00' Header x 11.55 sf x 2 = 6,052.9 cf Displacement

16,370.1 cf Field - 6,052.9 cf Chambers = 10,317.2 cf Stone x 0.0% Voids = 0.0 cf Stone Storage

Chamber Storage = 4,820.7 cf = 0.111 af

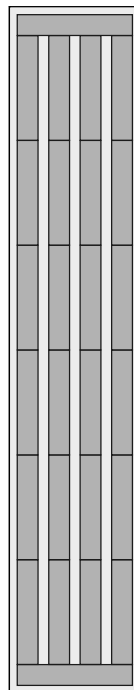
Overall Storage Efficiency = 29.4%

Overall System Size = 131.00' x 25.00' x 5.00'

24 Chambers

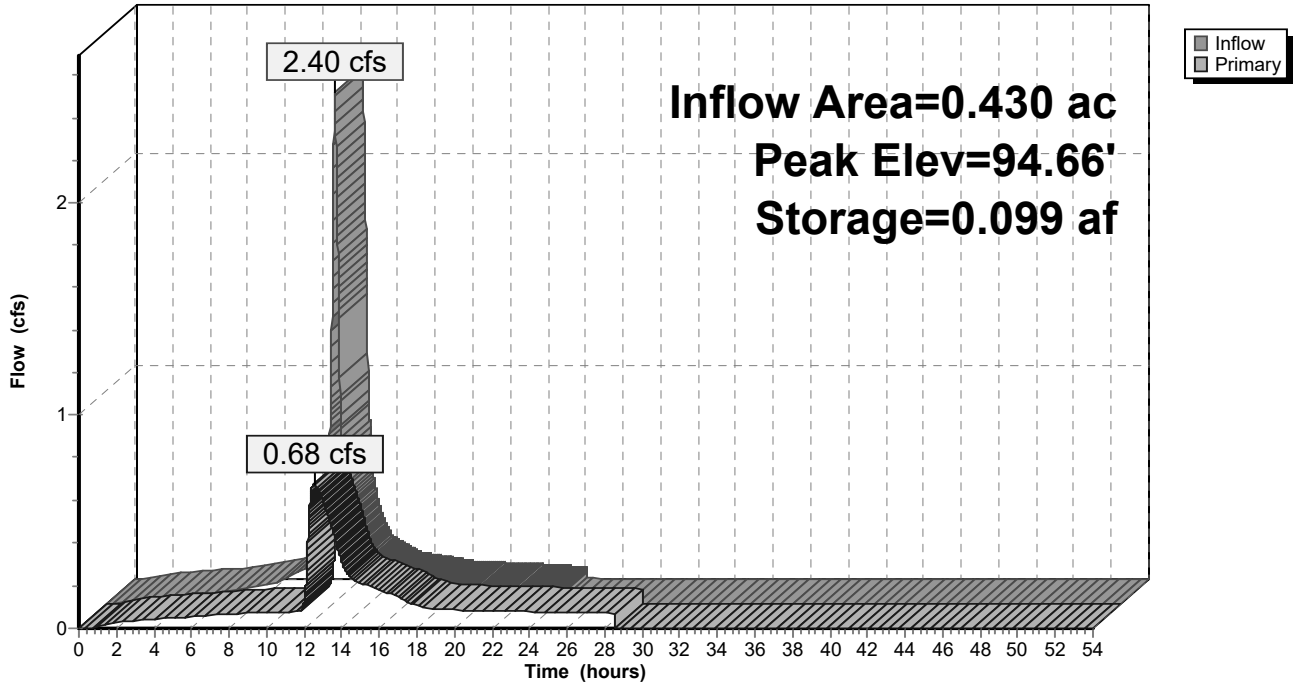
606.3 cy Field

382.1 cy Stone



### Pond BASIN C: BASIN C

Hydrograph





**Summary for Pond PAVE: POROUS PAVEMENT**

[42] Hint: Gap in defined storage above volume #1 at 97.50'

[44] Hint: Outlet device #2 is below defined storage

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=591)

Inflow Area = 0.230 ac, 77.39% Impervious, Inflow Depth = 6.69" for 5-MER 100YR event  
 Inflow = 1.31 cfs @ 12.14 hrs, Volume= 0.128 af  
 Outflow = 1.02 cfs @ 12.09 hrs, Volume= 0.128 af, Atten= 22%, Lag= 0.0 min  
 Primary = 1.02 cfs @ 12.09 hrs, Volume= 0.128 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs  
 Peak Elev= 96.35' @ 12.23 hrs Surf.Area= 0.016 ac Storage= 0.002 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)  
 Center-of-Mass det. time= 0.3 min ( 755.2 - 755.0 )

Volume	Invert	Avail.Storage	Storage Description
#1	96.00'	0.010 af	<b>Porous Pavement - East (Prismatic)</b> Listed below (Recalc) 0.024 af Overall x 40.0% Voids
#2	98.50'	0.014 af	<b>Porous Pavement - West (Prismatic)</b> Listed below (Recalc) 0.034 af Overall x 40.0% Voids
		0.023 af	Total Available Storage

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
96.00	0.016	0.000	0.000
97.50	0.016	0.024	0.024

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
98.50	0.023	0.000	0.000
100.00	0.023	0.034	0.034

Device	Routing	Invert	Outlet Devices
#1	Primary	93.00'	<b>15.0" Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#2	Device 1	93.00'	<b>5.0" Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads

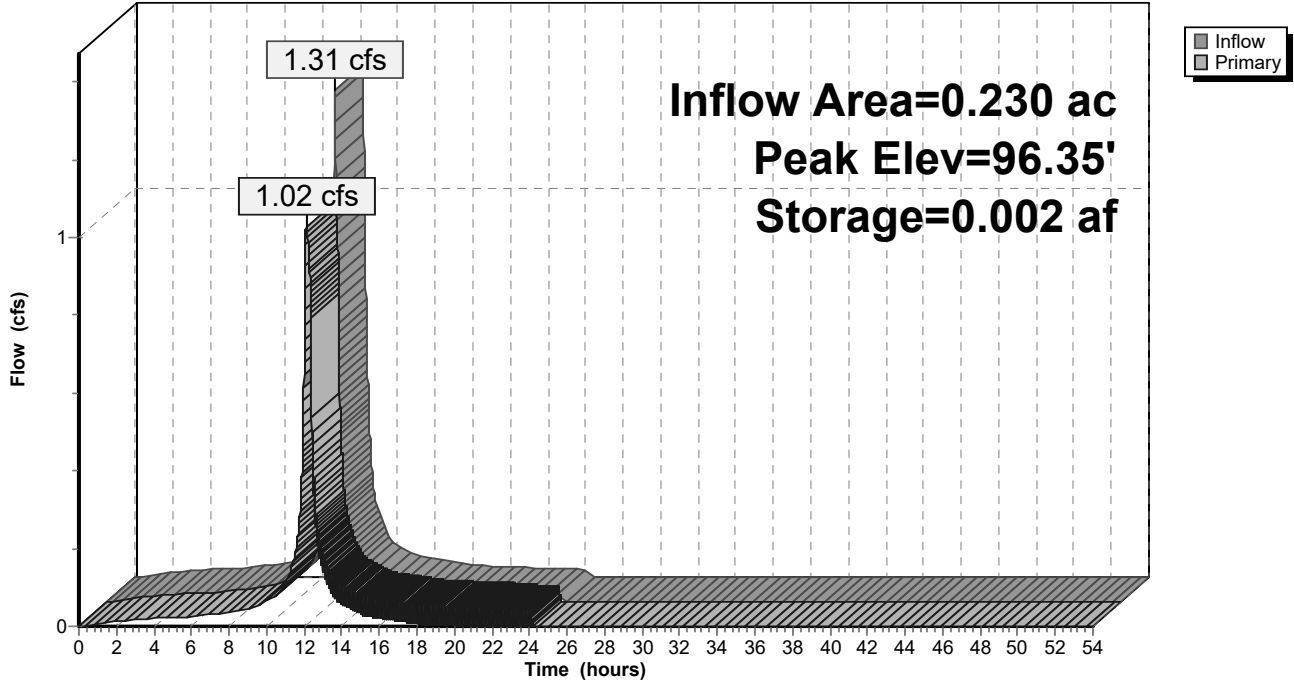
**Primary OutFlow** Max=1.02 cfs @ 12.09 hrs HW=96.01' TW=93.62' (Dynamic Tailwater)

↑1=Orifice/Grate (Passes 1.02 cfs of 9.13 cfs potential flow)

↑2=Orifice/Grate (Orifice Controls 1.02 cfs @ 7.46 fps)

### Pond PAVE: POROUS PAVEMENT

Hydrograph



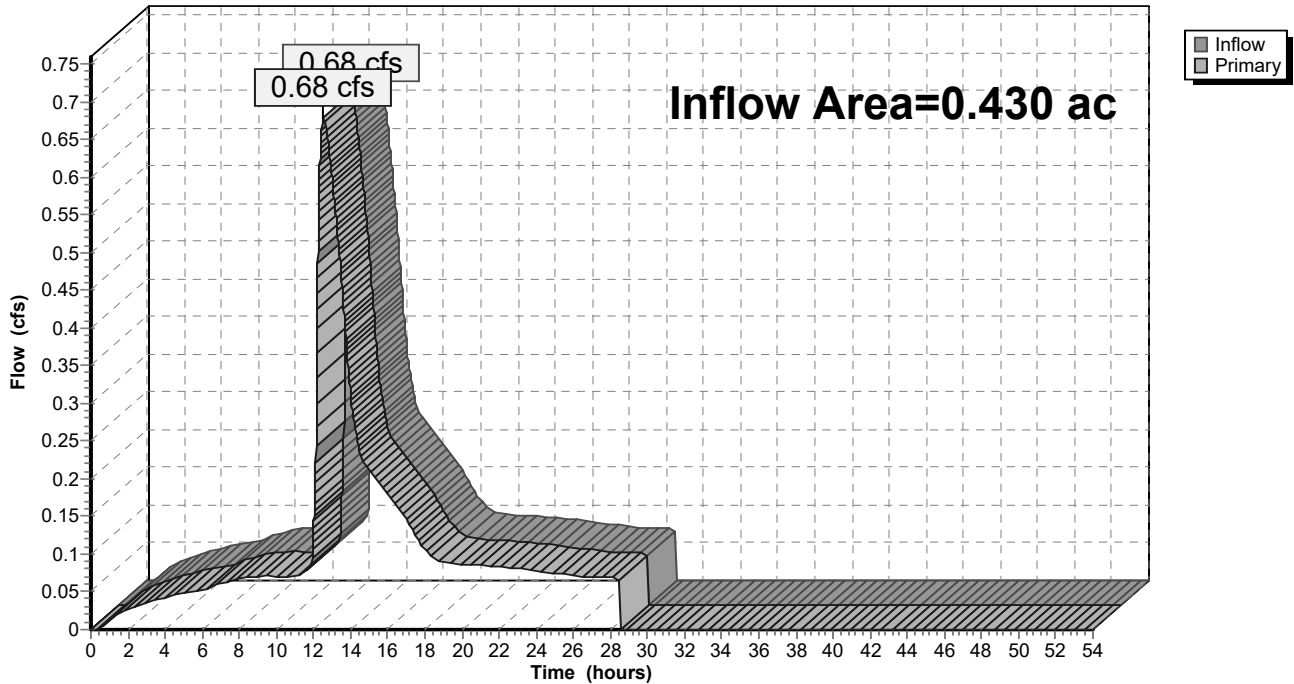
### Summary for Link POA-C1\*: POA-C1 (ROCKY BROOK)

Inflow Area = 0.430 ac, 41.40% Impervious, Inflow Depth = 7.35" for 5-MER 100YR event  
Inflow = 0.68 cfs @ 12.55 hrs, Volume= 0.263 af  
Primary = 0.68 cfs @ 12.55 hrs, Volume= 0.263 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-C1\*: POA-C1 (ROCKY BROOK)

Hydrograph



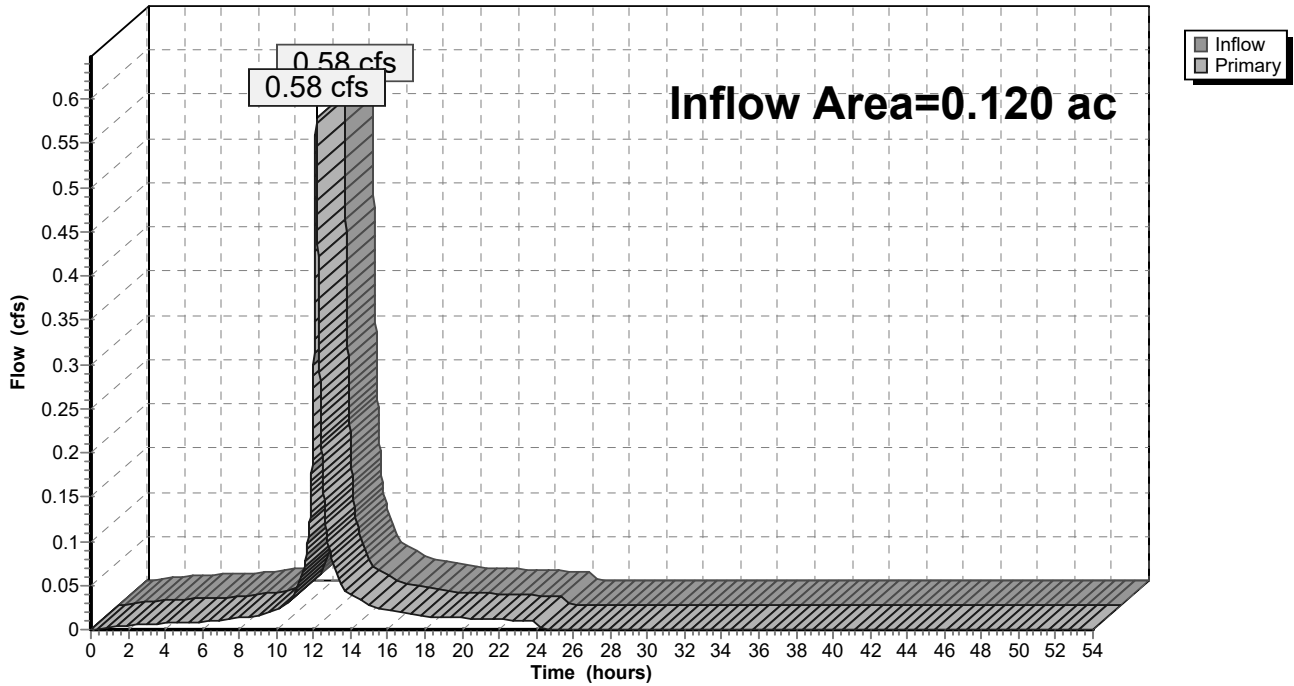
### Summary for Link POA-C2\*: POA-C2 (BANK STREET)

Inflow Area = 0.120 ac, 51.67% Impervious, Inflow Depth = 5.49" for 5-MER 100YR event  
Inflow = 0.58 cfs @ 12.14 hrs, Volume= 0.055 af  
Primary = 0.58 cfs @ 12.14 hrs, Volume= 0.055 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link POA-C2\*: POA-C2 (BANK STREET)

Hydrograph





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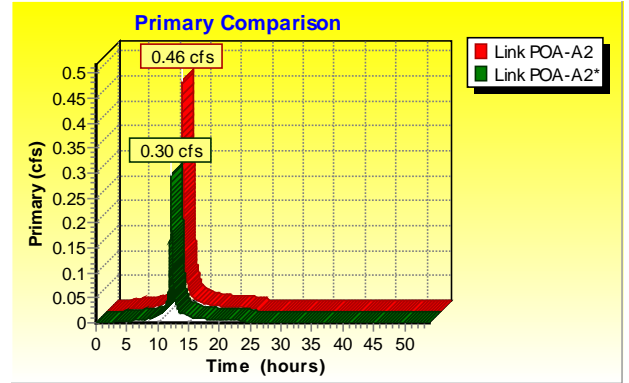
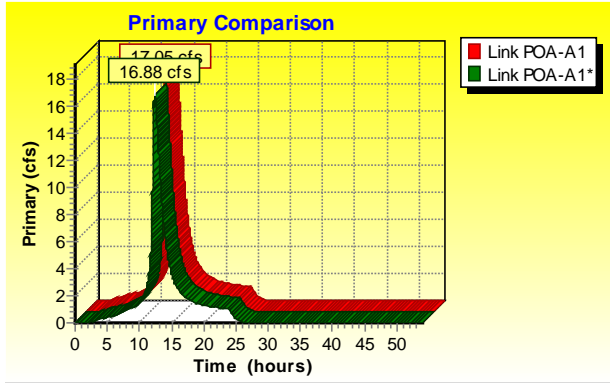
## **APPENDIX D**

### COMPARISON HYDROGRAPHS



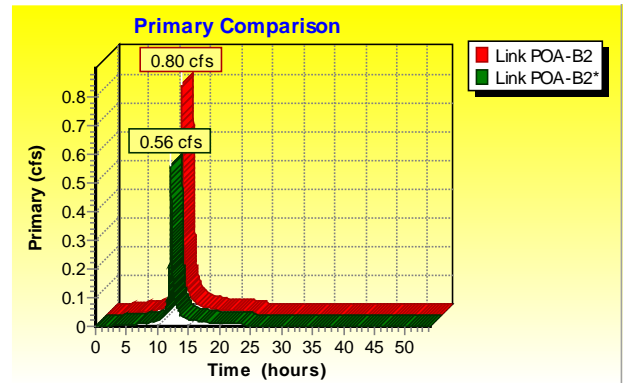
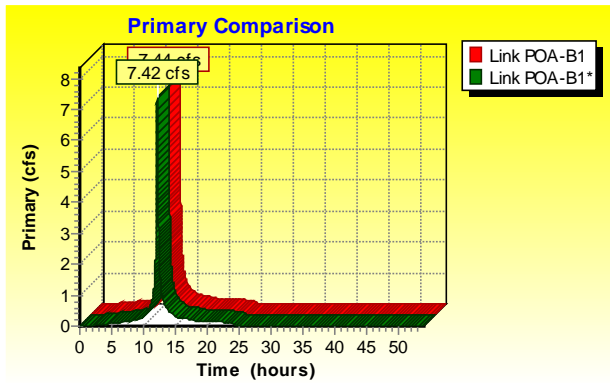
## HYDROGRAPH COMPARISON

### TRACT A



Analysis Point	Existing [cfs]	Proposed [cfs]
POA-A1	17.05	0.46
POA-A2	16.88	0.30

### TRACT B



Analysis Point	Existing [cfs]	Proposed [cfs]
POA-B1	7.44	0.80
POA-B2	7.42	0.56

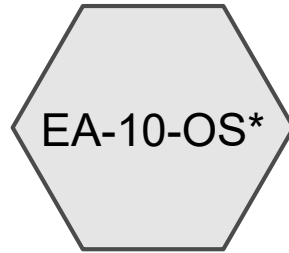
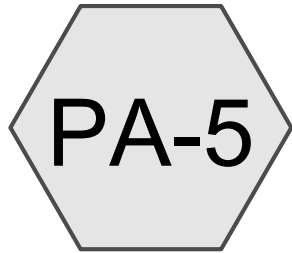
Note:

“\*” dictates the proposed condition’s hydrograph



## **APPENDIX E**

### **WATER QUALITY ROUTINGS MANUFACTURED TREATMENT DEVICE CERTIFICATION AND SPECIFICATIONS**

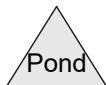
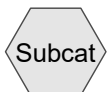


PA-5

EA-10-OS



MTD-A1





## **Project Notes**

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### Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-MER 1YR	NRCC 24-hr	C	Default	24.00	1	2.74	2
2	2-MER 2YR	NRCC 24-hr	C	Default	24.00	1	3.31	2
3	3-MER 10YR	NRCC 24-hr	C	Default	24.00	1	5.02	2
4	4-MER 25YR	NRCC 24-hr	C	Default	24.00	1	6.20	2
5	5-MER 100YR	NRCC 24-hr	C	Default	24.00	1	8.35	2
6	NJDEP WQ	NJ DEP 2-hr		Default	2.00	1	1.25	2

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### Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.085	61	>75% Grass cover, Good, HSG B (PA-5)
0.235	74	>75% Grass cover, Good, HSG C (EA-10-OS*, PA-5)
0.626	98	Paved parking, HSG B (PA-5)
0.189	98	Paved parking, HSG C (PA-5)
0.150	98	Roofs, HSG C (EA-10-OS*)
0.007	98	Sidewalks, HSG B (PA-5)
0.070	98	Unconnected pavement, HSG C (EA-10-OS*)
0.040	72	Woods/grass comb., Good, HSG C (EA-10-OS*)
<b>1.402</b>	<b>91</b>	<b>TOTAL AREA</b>

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## Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.718	HSG B	PA-5
0.684	HSG C	EA-10-OS*, PA-5
0.000	HSG D	
0.000	Other	
<b>1.402</b>		<b>TOTAL AREA</b>

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**Ground Covers (selected nodes)**

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.085	0.235	0.000	0.000	0.320	>75% Grass cover, Good	EA-10-O S*, PA-5
0.000	0.626	0.189	0.000	0.000	0.815	Paved parking	PA-5
0.000	0.000	0.150	0.000	0.000	0.150	Roofs	EA-10-O S*
0.000	0.007	0.000	0.000	0.000	0.007	Sidewalks	PA-5
0.000	0.000	0.070	0.000	0.000	0.070	Unconnected pavement	EA-10-O S*
0.000	0.000	0.040	0.000	0.000	0.040	Woods/grass comb., Good	EA-10-O S*
<b>0.000</b>	<b>0.718</b>	<b>0.684</b>	<b>0.000</b>	<b>0.000</b>	<b>1.402</b>	<b>TOTAL AREA</b>	

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*NJ DEP 2-hr NJDEP WQ Rainfall=1.25"*

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Time span=0.00-54.00 hrs, dt=0.01 hrs, 5401 points  
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious  
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment EA-10-OS\*: EA-10-OS**

Runoff Area=0.480 ac 31.25% Impervious Runoff Depth=0.43"  
Tc=6.0 min CN=79/98 Runoff=0.56 cfs 0.017 af

**Subcatchment PA-5: PA-5**

Runoff Area=0.922 ac 89.15% Impervious Runoff Depth=0.92"  
Tc=6.0 min CN=63/98 Runoff=2.41 cfs 0.071 af

**Link MTD-A1: MTD-A1**

Inflow=2.96 cfs 0.088 af  
Primary=2.96 cfs 0.088 af

**Total Runoff Area = 1.402 ac Runoff Volume = 0.088 af Average Runoff Depth = 0.75"**  
**30.67% Pervious = 0.430 ac 69.33% Impervious = 0.972 ac**

**Summary for Subcatchment EA-10-OS\*: EA-10-OS**

Runoff = 0.56 cfs @ 1.12 hrs, Volume= 0.017 af, Depth= 0.43"

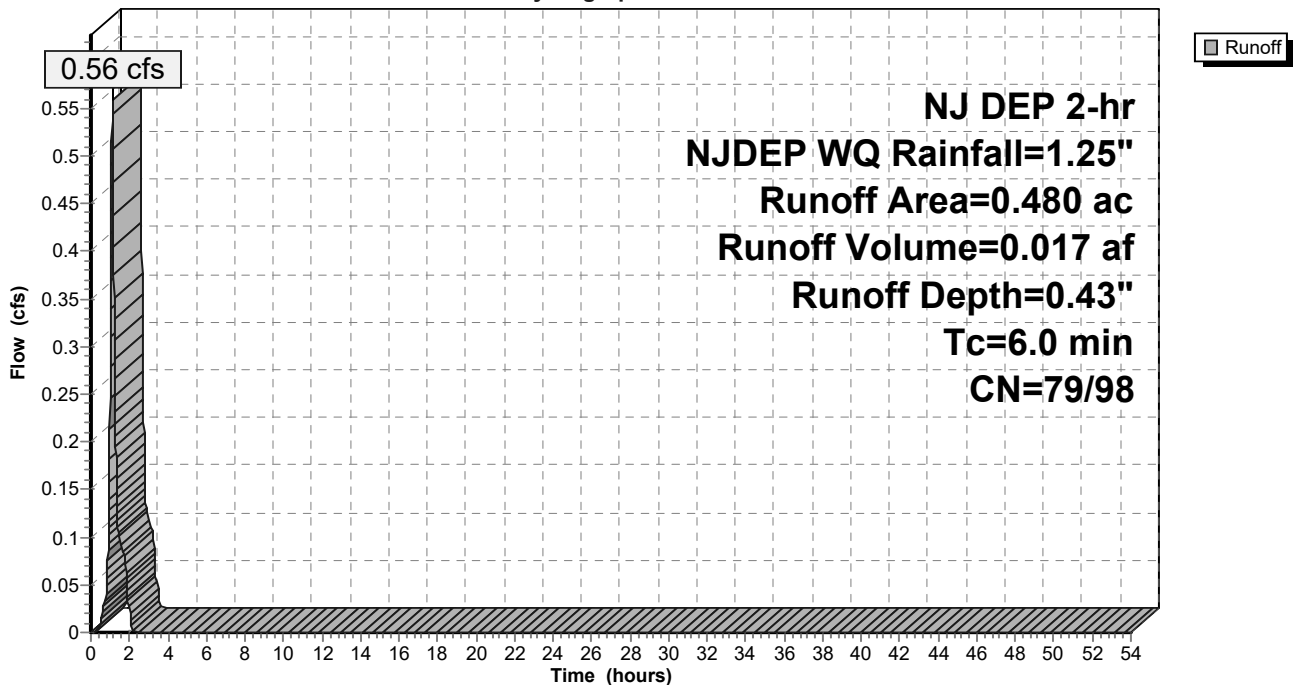
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= 0.01  
 NJ DEP 2-hr NJDEP WQ Rainfall=1.25"

Area (ac)	CN	Description
0.150	98	Roofs, HSG C
0.070	98	Unconnected pavement, HSG C
0.220	74	>75% Grass cover, Good, HSG C
0.040	72	Woods/grass comb., Good, HSG C
0.480	85	Weighted Average
0.330	79	68.75% Pervious Area
0.150	98	31.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment EA-10-OS\*: EA-10-OS**

Hydrograph



**Summary for Subcatchment PA-5: PA-5**

Runoff = 2.41 cfs @ 1.11 hrs, Volume= 0.071 af, Depth= 0.92"

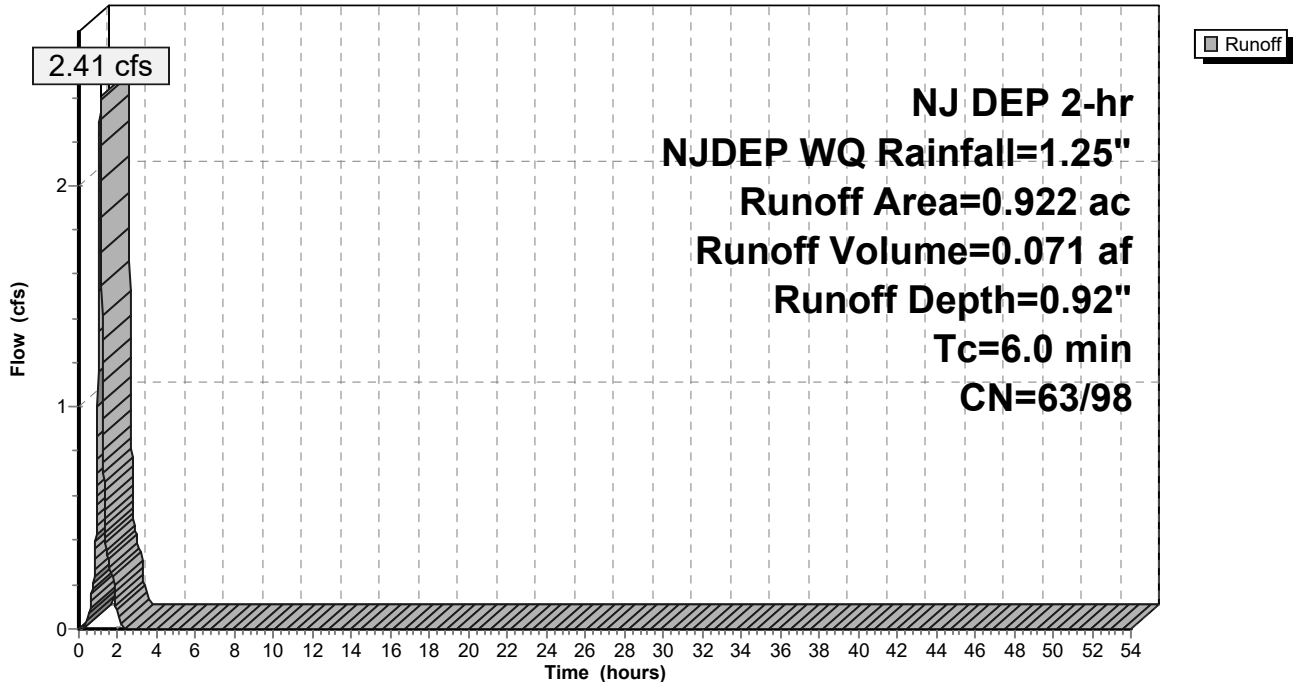
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= 0.01  
 NJ DEP 2-hr NJDEP WQ Rainfall=1.25"

Area (ac)	CN	Description
0.626	98	Paved parking, HSG B
* 0.007	98	Sidewalks, HSG B
0.189	98	Paved parking, HSG C
0.015	74	>75% Grass cover, Good, HSG C
0.085	61	>75% Grass cover, Good, HSG B
0.922	94	Weighted Average
0.100	63	10.85% Pervious Area
0.822	98	89.15% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PA-5: PA-5**

Hydrograph





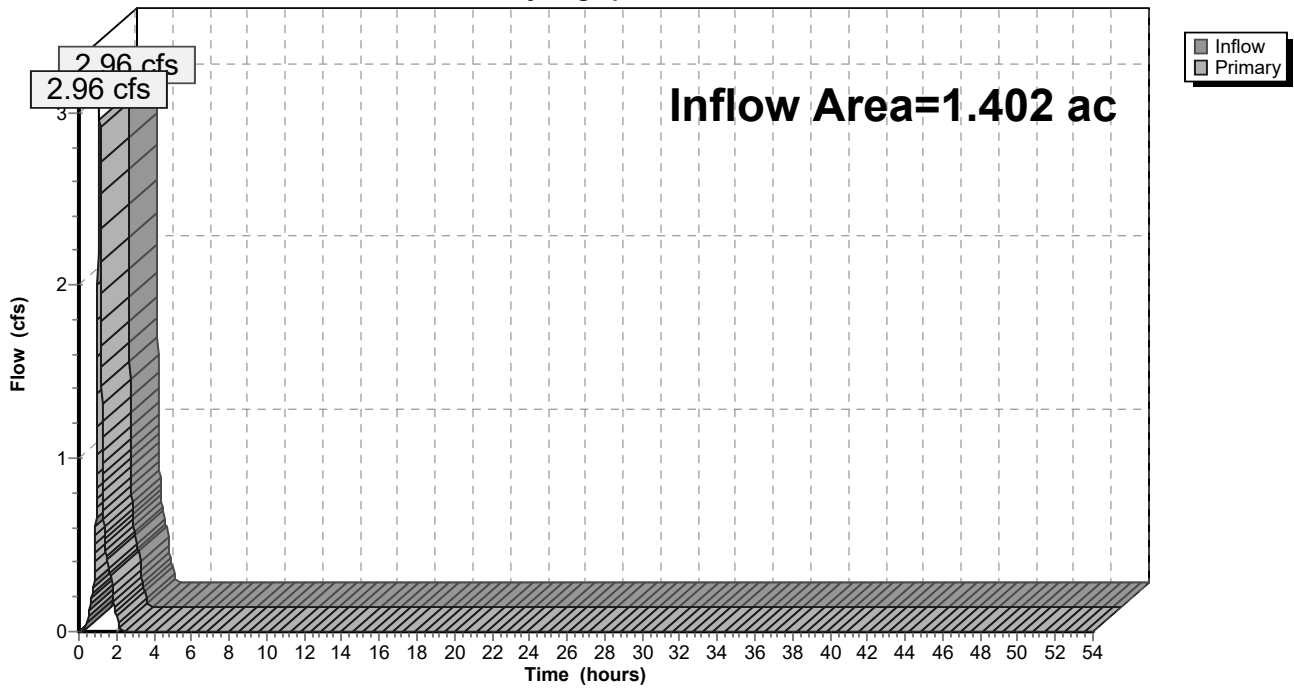
### Summary for Link MTD-A1: MTD-A1

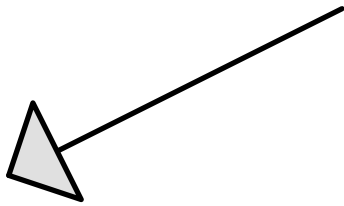
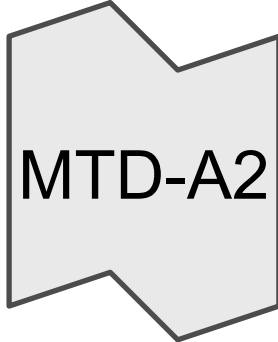
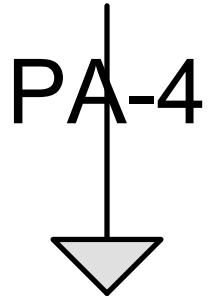
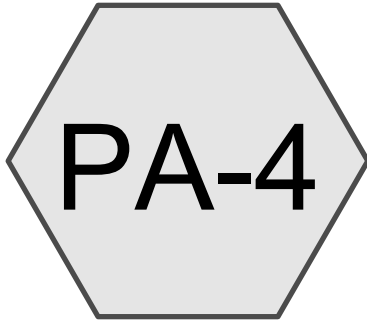
Inflow Area = 1.402 ac, 69.33% Impervious, Inflow Depth = 0.75" for NJDEP WQ event  
Inflow = 2.96 cfs @ 1.11 hrs, Volume= 0.088 af  
Primary = 2.96 cfs @ 1.11 hrs, Volume= 0.088 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

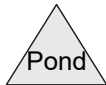
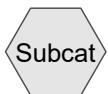
### Link MTD-A1: MTD-A1

Hydrograph





MTD-A2



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### Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-MER 1YR	NRCC 24-hr	C	Default	24.00	1	2.74	2
2	2-MER 2YR	NRCC 24-hr	C	Default	24.00	1	3.31	2
3	3-MER 10YR	NRCC 24-hr	C	Default	24.00	1	5.02	2
4	4-MER 25YR	NRCC 24-hr	C	Default	24.00	1	6.20	2
5	5-MER 100YR	NRCC 24-hr	C	Default	24.00	1	8.35	2
6	NJDEP WQ	NJ DEP 2-hr		Default	2.00	1	1.25	2

**Area Listing (selected nodes)**

Area (acres)	CN	Description (subcatchment-numbers)
0.094	61	>75% Grass cover, Good, HSG B (PA-4)
0.152	74	>75% Grass cover, Good, HSG C (PA-4)
0.314	98	Paved parking, HSG A (PA-4)
0.112	98	Paved parking, HSG B (PA-4)
0.450	98	Paved parking, HSG C (PA-4)
0.017	98	Sidewalks, HSG A (PA-4)
0.079	98	Sidewalks, HSG C (PA-4)
<b>1.218</b>	<b>92</b>	<b>TOTAL AREA</b>

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## Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.331	HSG A	PA-4
0.206	HSG B	PA-4
0.681	HSG C	PA-4
0.000	HSG D	
0.000	Other	
<b>1.218</b>		<b>TOTAL AREA</b>

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**Ground Covers (selected nodes)**

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.094	0.152	0.000	0.000	0.246	>75% Grass cover, Good	PA-4
0.314	0.112	0.450	0.000	0.000	0.876	Paved parking	PA-4
0.017	0.000	0.079	0.000	0.000	0.096	Sidewalks	PA-4
<b>0.331</b>	<b>0.206</b>	<b>0.681</b>	<b>0.000</b>	<b>0.000</b>	<b>1.218</b>	<b>TOTAL AREA</b>	

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*NJ DEP 2-hr NJDEP WQ Rainfall=1.25"*

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Time span=0.00-54.00 hrs, dt=0.01 hrs, 5401 points  
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious  
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment PA-4: PA-4**

Runoff Area=1.218 ac 79.80% Impervious Runoff Depth=0.83"  
Tc=6.0 min CN=69/98 Runoff=2.85 cfs 0.084 af

**Link MTD-A2: MTD-A2**

Inflow=2.85 cfs 0.084 af  
Primary=2.85 cfs 0.084 af

**Total Runoff Area = 1.218 ac Runoff Volume = 0.084 af Average Runoff Depth = 0.83"**  
**20.20% Pervious = 0.246 ac 79.80% Impervious = 0.972 ac**



**Summary for Subcatchment PA-4: PA-4**

Runoff = 2.85 cfs @ 1.11 hrs, Volume= 0.084 af, Depth= 0.83"

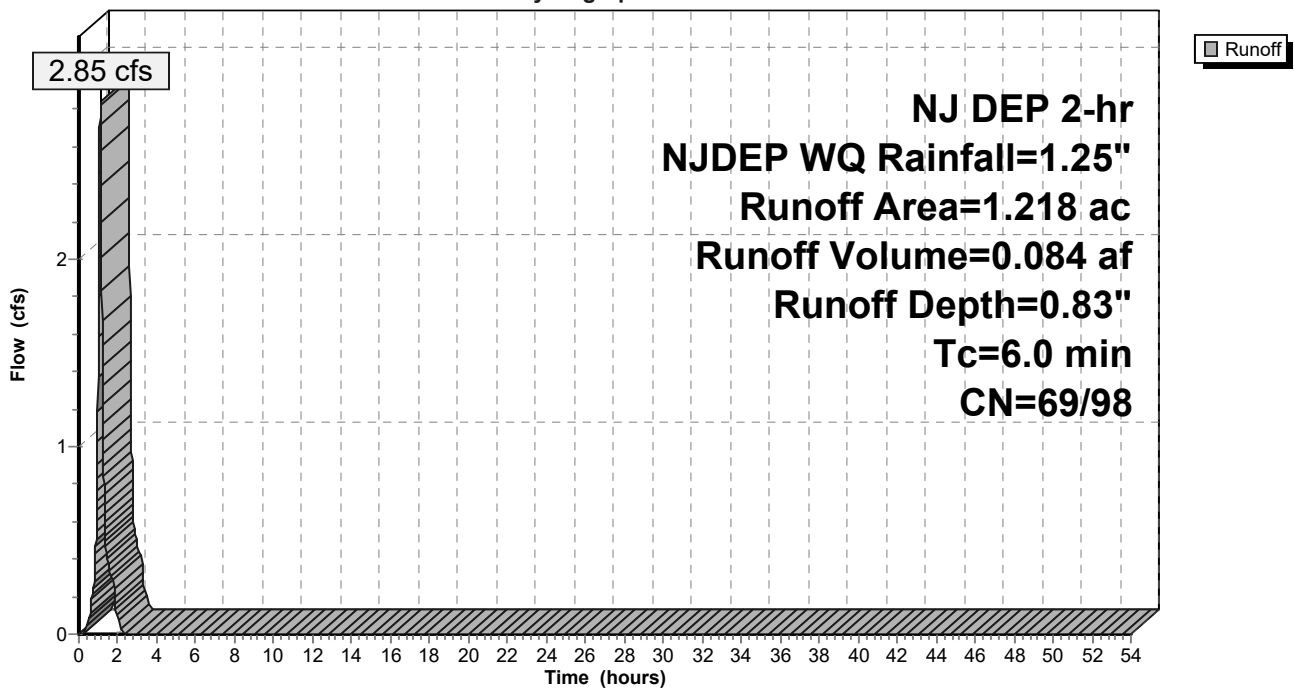
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= 0.01  
 NJ DEP 2-hr NJDEP WQ Rainfall=1.25"

Area (ac)	CN	Description
0.314	98	Paved parking, HSG A
0.112	98	Paved parking, HSG B
0.450	98	Paved parking, HSG C
* 0.017	98	Sidewalks, HSG A
* 0.079	98	Sidewalks, HSG C
0.152	74	>75% Grass cover, Good, HSG C
0.094	61	>75% Grass cover, Good, HSG B
1.218	92	Weighted Average
0.246	69	20.20% Pervious Area
0.972	98	79.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PA-4: PA-4**

Hydrograph



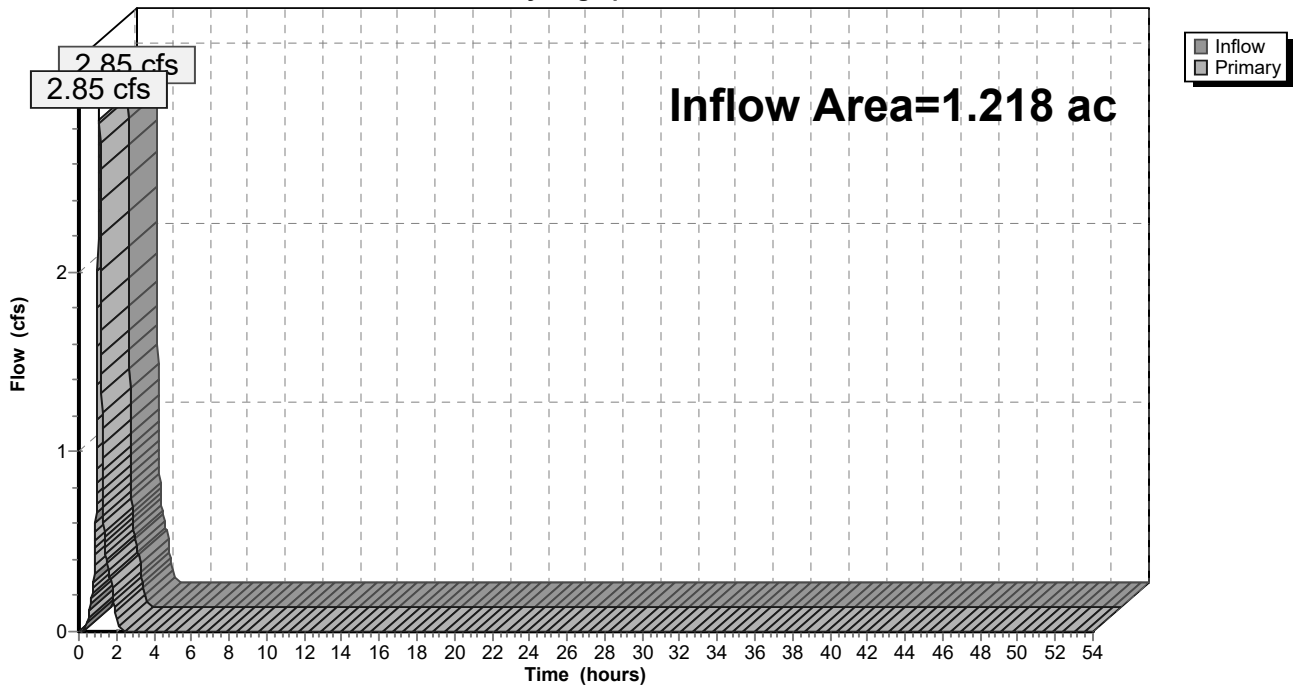
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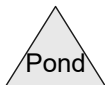
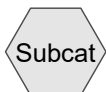
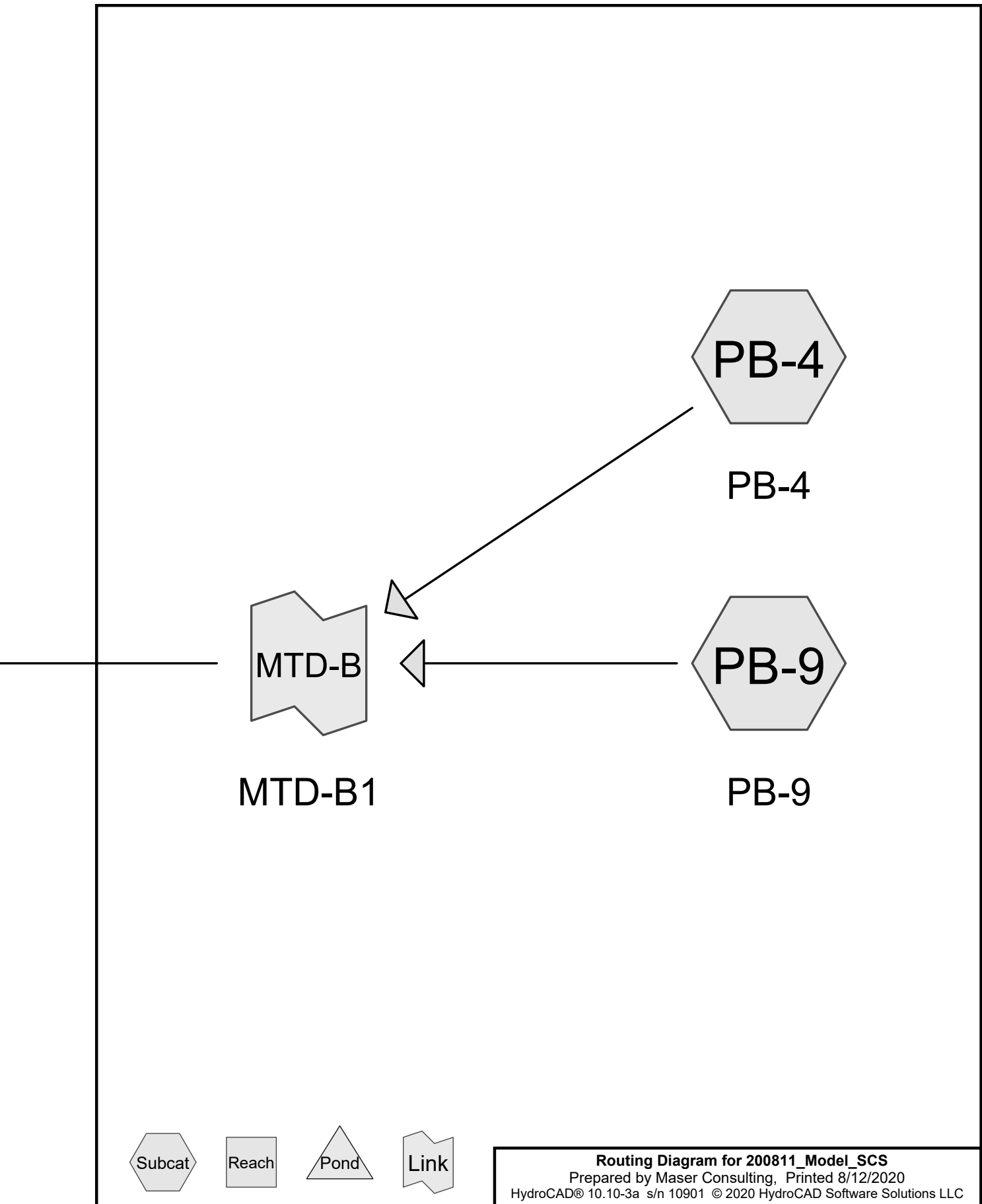
Inflow Area = 1.218 ac, 79.80% Impervious, Inflow Depth = 0.83" for NJDEP WQ event  
Inflow = 2.85 cfs @ 1.11 hrs, Volume= 0.084 af  
Primary = 2.85 cfs @ 1.11 hrs, Volume= 0.084 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link MTD-A2: MTD-A2

Hydrograph





## **Project Notes**

Rainfall events imported from "200330\_Analysis.hcp"

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### Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-MER 1YR	NRCC 24-hr	C	Default	24.00	1	2.74	2
2	2-MER 2YR	NRCC 24-hr	C	Default	24.00	1	3.31	2
3	3-MER 10YR	NRCC 24-hr	C	Default	24.00	1	5.02	2
4	4-MER 25YR	NRCC 24-hr	C	Default	24.00	1	6.20	2
5	5-MER 100YR	NRCC 24-hr	C	Default	24.00	1	8.35	2
6	NJDEP WQ	NJ DEP 2-hr		Default	2.00	1	1.25	2

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### Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.720	98	Paved parking, HSG A (PB-9)
0.500	98	Paved parking, HSG D (PB-4)
<b>1.220</b>	<b>98</b>	<b>TOTAL AREA</b>

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## Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.720	HSG A	PB-9
0.000	HSG B	
0.000	HSG C	
0.500	HSG D	PB-4
0.000	Other	
<b>1.220</b>		<b>TOTAL AREA</b>

**200811\_Model\_SCS**

Prepared by Maser Consulting

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**Ground Covers (selected nodes)**

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.720	0.000	0.000	0.500	0.000	1.220	Paved parking	PB-4, PB-9
<b>0.720</b>	<b>0.000</b>	<b>0.000</b>	<b>0.500</b>	<b>0.000</b>	<b>1.220</b>	<b>TOTAL AREA</b>	



**200811\_Model\_SCS**

Prepared by Maser Consulting

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*NJ DEP 2-hr NJDEP WQ Rainfall=1.25"*

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Time span=0.00-54.00 hrs, dt=0.01 hrs, 5401 points  
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious  
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment PB-4: PB-4**

Runoff Area=0.500 ac 100.00% Impervious Runoff Depth=1.03"  
Tc=6.0 min CN=0/98 Runoff=1.46 cfs 0.043 af

**Subcatchment PB-9: PB-9**

Runoff Area=0.720 ac 100.00% Impervious Runoff Depth=1.03"  
Tc=6.0 min CN=0/98 Runoff=2.11 cfs 0.062 af

**Link MTD-B: MTD-B1**

Inflow=3.57 cfs 0.105 af  
Primary=3.57 cfs 0.105 af

**Total Runoff Area = 1.220 ac Runoff Volume = 0.105 af Average Runoff Depth = 1.03"**  
**0.00% Pervious = 0.000 ac 100.00% Impervious = 1.220 ac**

**Summary for Subcatchment PB-4: PB-4**

Runoff = 1.46 cfs @ 1.11 hrs, Volume= 0.043 af, Depth= 1.03"

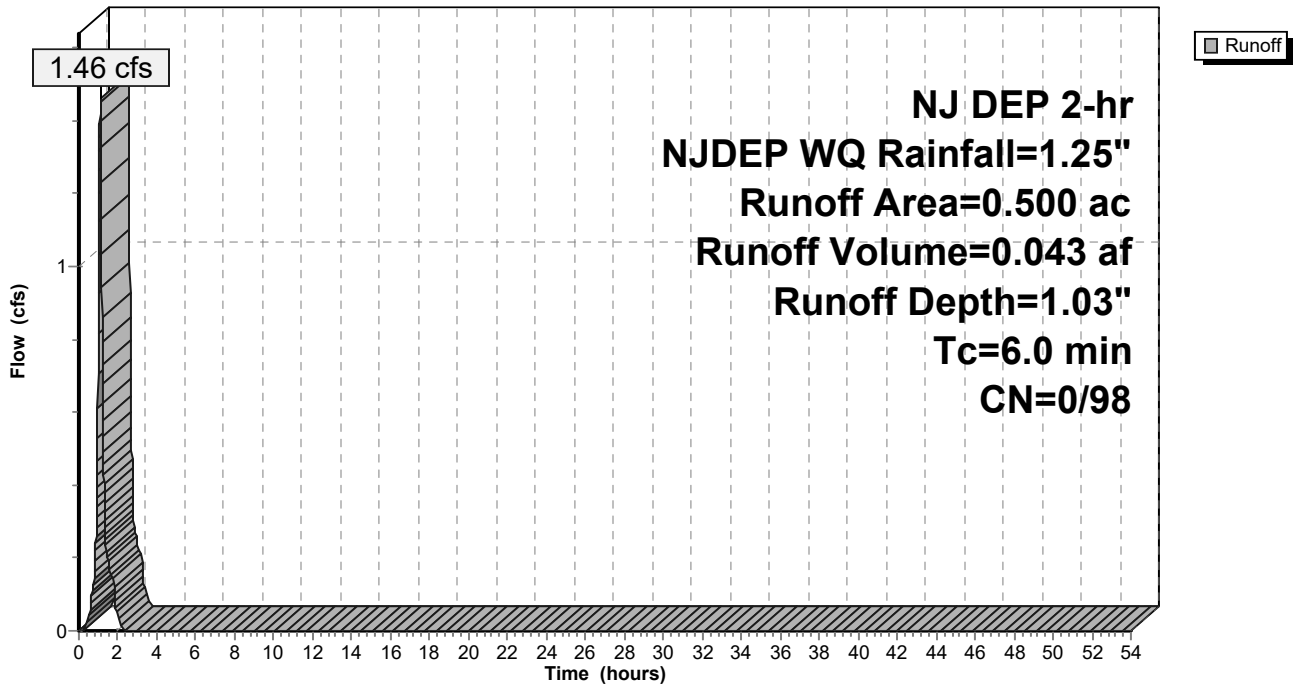
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= 0.01  
 NJ DEP 2-hr NJDEP WQ Rainfall=1.25"

Area (ac)	CN	Description
0.500	98	Paved parking, HSG D
0.500	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PB-4: PB-4**

Hydrograph



**Summary for Subcatchment PB-9: PB-9**

Runoff = 2.11 cfs @ 1.11 hrs, Volume= 0.062 af, Depth= 1.03"

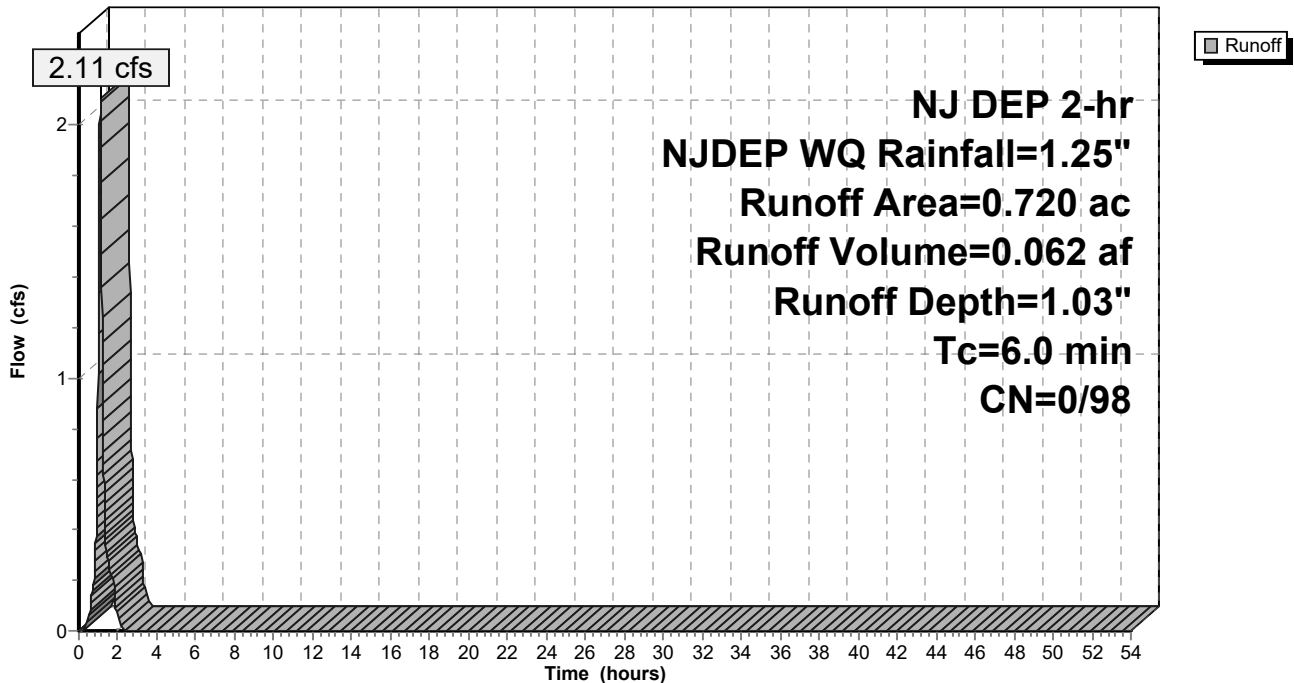
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= 0.01  
 NJ DEP 2-hr NJDEP WQ Rainfall=1.25"

Area (ac)	CN	Description
0.720	98	Paved parking, HSG A
0.720	98	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PB-9: PB-9**

Hydrograph

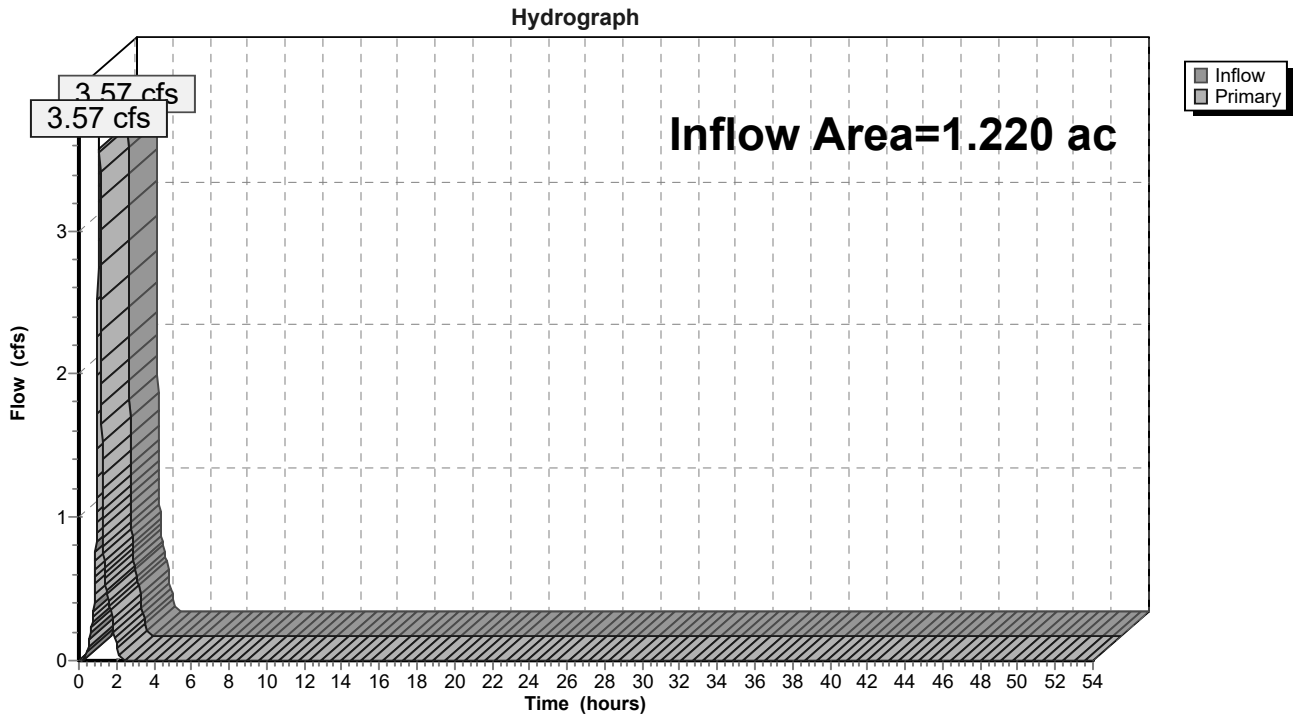


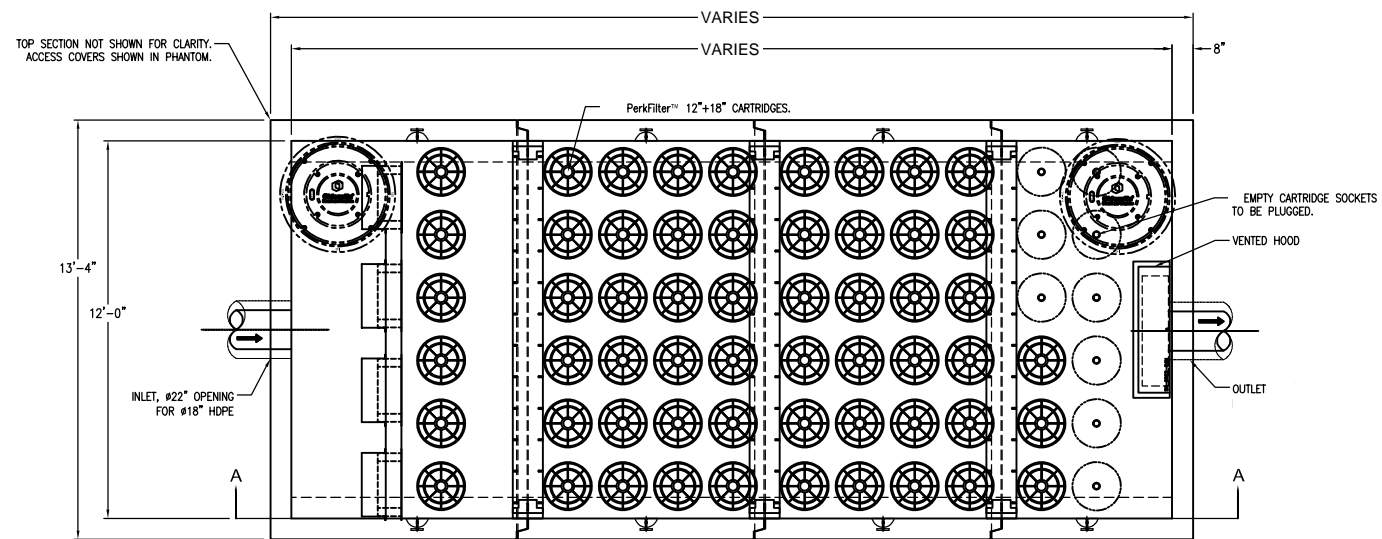
### Summary for Link MTD-B: MTD-B1

Inflow Area = 1.220 ac, 100.00% Impervious, Inflow Depth = 1.03" for NJDEP WQ event  
Inflow = 3.57 cfs @ 1.11 hrs, Volume= 0.105 af  
Primary = 3.57 cfs @ 1.11 hrs, Volume= 0.105 af, Atten= 0%, Lag= 0.0 min

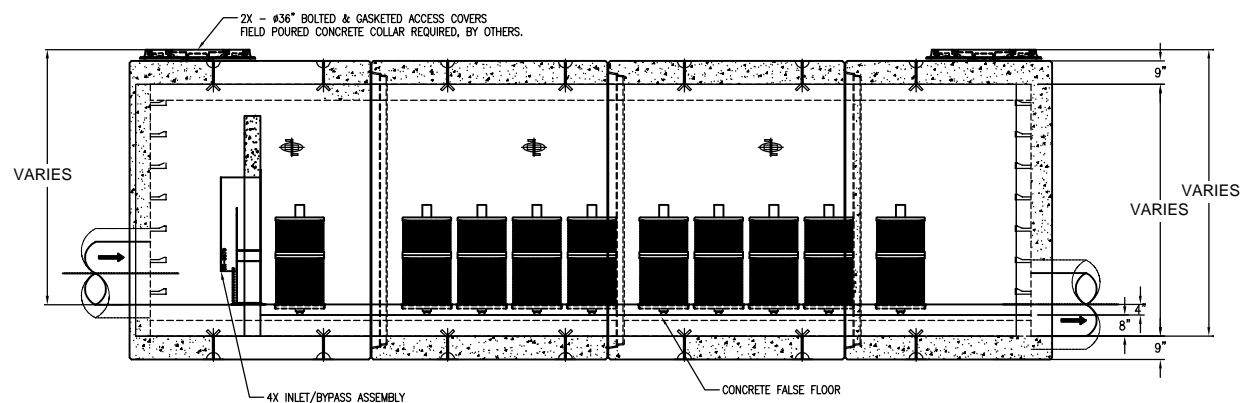
Primary outflow = Inflow, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs

### Link MTD-B: MTD-B1





PLAN VIEW



SECTION A-A

MINIMUM DEPTH -RIM TO OUTLET INVERT-			
CARTRIDGE STACK CONFIGURATION			
12"	18"	12" + 12"	12" + 18"
4.25'	5.00'	5.92'	6.67'

NOTES:

1. DESIGN LOADINGS:
  - A. AASHTO HS-20-44 W/ IMPACT.
  - B. DESIGN FILL: 1'-0" MAXIMUM.
  - C. ASSUMED WATER TABLE = BELOW INVERT.
  - D. DRY LATERAL EARTH PRESSURE (EFP) = 45 PCF.
  - E. LATERAL LIVE LOAD SURCHARGE = 80 PSF (APPLIED TO 8' BELOW GRADE).
  - F. NO LATERAL SURCHARGE FROM ADJACENT BUILDINGS, WALLS, PIERS, OR FOUNDATIONS.
2. CONCRETE 28 DAY COMPRESSIVE STRENGTH SHALL BE 5,000 PSI MINIMUM.
3. STEEL REINFORCEMENT: REBAR, ASTM A-615 OR A-706, GRADE 60.
4. CEMENT: ASTM C-150 SPECIFICATION.
5. REQUIRED NATIVE ALLOWABLE SOIL BEARING PRESSURE = 2,500 PSF.
6. REFERENCE STANDARD:
  - A. ASTM C 890
  - B. ASTM C 913
7. THIS STRUCTURE IS DESIGNED TO THE PARAMETERS NOTED HEREIN. PLEASE VERIFY THAT THESE PARAMETERS MEET PROJECT REQUIREMENTS (I.E. LIVE LOAD, FILL RANGE, WATER TABLE). IF DESIGN PARAMETERS ARE INCORRECT, REVIEWING ENGINEER/AUTHORITY SHALL NOTIFY OLDCASTLE PRECAST UPON REVIEW OF THIS SUBMITTAL.
8. OVERSIZED HOLES TO ACCOMMODATE SPECIFIC PIPE TYPE MUST BE CONCENTRIC TO PIPE ID. AFTER PIPES ARE INSTALLED, ALL ANNULAR SPACES SHALL BE FILLED WITH A MINIMUM OF 3000 PSI CONCRETE FOR FULL THICKNESS OF PRECAST WALLS.
9. CONTRACTOR RESPONSIBLE TO VERIFY ALL SIZES, LOCATIONS AND ELEVATIONS OF OPENINGS.
10. CONTRACTOR RESPONSIBLE TO ENSURE ADEQUATE BEARING SURFACE IS PROVIDED (I.E. COMPACTED & LEVEL PER PROJECT SPECIFICATIONS)
11. SECTION HEIGHTS, SLAB/WALL THICKNESSES & KEYWAYS ARE SUBJECT TO CHANGE DUE TO AVAILABILITY & PRODUCTION PLANT CAPABILITY.
12. MAXIMUM PICK WEIGHT: CARTRIDGE BAY END CAP WITH INTERNALS INSTALLED = TBD LBS.



Ph: 800.579.8819 | oldcastlestormwater.com

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PerkFilter™ Box Culvert Vault

Customer:  
Maser Consulting

Job Name:  
PRC HIGHTSTOWN

DATE	SALES	DRAWN	ENGINEER	CHECKED	SALES ORDER
	BH	CJS	CJS	-	-
DRAWING NUMBER				REVISION	SHEET
				REV DATE	1 OF 1



REV.	DESCRIPTION	REV BY.	DATE



## State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION  
Bureau of Nonpoint Pollution Control  
Division of Water Quality  
Mail Code 401-02B  
Post Office Box 420  
Trenton, New Jersey 08625-0420  
609-633-7021 Fax: 609-777-0432  
[http://www.state.nj.us/dep/dwq/bnpc\\_home.htm](http://www.state.nj.us/dep/dwq/bnpc_home.htm)

CHRIS CHRISTIE  
*Governor*

KIM GUADAGNO  
*Lt. Governor*

BOB MARTIN  
*Commissioner*

**June 30, 2017**

Jay Holtz, P.E.  
Director of Engineering  
Oldcastle Precast, Inc.  
5331 SW Macadam Ave., #376  
Portland, OR 97239

Re: MTD Laboratory Certification  
PerkFilter™ Media Filtration System by Oldcastle Precast, Inc.  
On-line Installation

### **TSS Removal Rate 80%**

Dear Mr. Holtz:

The Stormwater Management rules under N.J.A.C. 7:8-5.5(b) and 5.7(c) allow the use of manufactured treatment devices (MTDs) for compliance with the design and performance standards at N.J.A.C. 7:8-5 if the pollutant removal rates have been verified by the New Jersey Corporation for Advanced Technology (NJCAT) and have been certified by the New Jersey Department of Environmental Protection (NJDEP). Oldcastle Precast has requested a Laboratory Certification for the PerkFilter™ Media Filtration System.

This project falls under the "Procedure for Obtaining Verification of a Stormwater Manufactured Treatment Device from New Jersey Corporation for Advanced Technology" dated January 25, 2013. The applicable protocol is the "New Jersey Department of Environmental Protection Laboratory Protocol to Assess Total Suspended Solids Removal by a Filtration Manufactured Treatment Device" dated January 25, 2013.

NJCAT verification documents submitted to the NJDEP indicate that the requirements of the aforementioned protocol have been met or exceeded. The NJCAT letter also included a recommended certification TSS removal rate and the required maintenance plan. The NJCAT Verification Report with the Verification Appendix for this device is published online at <http://www.njcat.org/verification-process/technology-verification-database.html>

**The NJDEP certifies the use of the PerkFilter™ Media Filtration System by Oldcastle Precast, Inc. at a TSS removal rate of 80%, when designed, operated and maintained in accordance with the information provided in the Verification Appendix and subject to the following conditions:**

1. The maximum treatment flow rate (MTFR) for the manufactured treatment device (MTD) is calculated using the New Jersey Water Quality Design Storm (1.25 inches in 2 hrs) in N.J.A.C. 7:8-5.5. The MTFR is calculated based on a verified loading rate of 2.54 gpm/ft<sup>2</sup> of effective filtration treatment area.
2. The PerkFilter™ Media Filtration System shall be installed using the same configuration as the unit verified by NJCAT, and sized in accordance with the criteria specified in item 6 below.
3. This device cannot be used in series with another MTD or a media filter (such as a sand filter), to achieve an enhanced removal rate for total suspended solids (TSS) removal under N.J.A.C. 7:8-5.5.
4. Additional design criteria for MTDs can be found in Chapter 9.6 of the New Jersey Stormwater Best Management Practices (NJ Stormwater BMP) Manual, which can be found on-line at [www.njstormwater.org](http://www.njstormwater.org).
5. The maintenance plan for a site using this device shall incorporate, at a minimum, the maintenance requirements for the PerkFilter™ Media Filtration System, which is attached to this document. However, it is recommended to review the maintenance website at [http://www.kristar.com/images/downloads/manuals/PerkFilter\\_Maintenance\\_Guide\\_11\\_4\\_15.pdf](http://www.kristar.com/images/downloads/manuals/PerkFilter_Maintenance_Guide_11_4_15.pdf) for any changes to the maintenance requirements.
6. Sizing Requirements:

The example below demonstrates the sizing procedure for a PerkFilter™ Media Filtration System.

Example: A 0.25-acre impervious site is to be treated to 80% TSS removal using a PerkFilter™ Media Filtration System. The impervious site runoff (Q) based on the New Jersey Water Quality Design Storm was determined to be 0.79 cfs or 354.58 gpm.

The calculation of the minimum number of cartridges for use in the PerkFilter™ Media Filtration System is based upon both the MTFR and the maximum inflow drainage area. It is necessary to calculate the required number of cartridges using both methods and to rely on the method that results in the highest number of cartridges determined by the two methods.

Inflow Drainage Area Evaluation:

The drainage area to the PerkFilter™ Media Filtration System in this example is 0.25 acres. Based upon the information in Table 1 below, the following minimum numbers of cartridges are required in a PerkFilter™ Media Filtration System to treat the impervious area without exceeding the maximum without exceeding the maximum drainage area:

1. Nine (9) 12” cartridges;
2. Six (6) 18” cartridges;
3. Five (5) 24” cartridges; or
4. Four (4) 30” cartridges.

Maximum Treatment Flow Rate (MTFR) Evaluation:

The site runoff (Q) was determined based on the following:

time of concentration = 10 minutes

i=3.2 in/hr (page 5-8, Fig. 5-3 of the NJ Stormwater BMP Manual)

c=0.99 (runoff coefficient for impervious)

$Q=ciA=0.99 \times 3.2 \times 0.25 = 0.79$  cfs, or  $0.79 \times 448.83 = 354.58$  gpm

Based on a flow rate of 354.58 gpm, the following minimum numbers of cartridges are required in a PerkFilter™ Media Filtration System without exceeding the MTFR:

1. Thirty (30) 12” cartridges;
2. Twenty (20) 18” cartridges;
3. Fifteen (15) 24” cartridges; or
4. Twelve (12) 30” cartridges.

The MTFR Evaluation results will be used since that method results in the higher minimum configuration determined by the two methods.

The sizing table corresponding to the available system models is noted below:

Table 1 PerkFilter™ Cartridge Heights and NJ Cartridge Treatment Capabilities

PerkFilter Cartridge Height (inches)	Filtration Treatment Area (sq. ft)	Maximum Treatment Flow Rate, MTFR (gpm) <sup>1</sup>	Mass Capture Capacity (lb) <sup>2</sup>	Maximum Allowable Drainage Area (acres) <sup>3</sup>
12	4.7	12	17.2	0.029
18	7.1	18	25.7	0.043
24	9.4	24	34.3	0.057
30	11.8	30	42.9	0.072

<sup>1</sup> Based on surface loading rate of 2.54 gpm/ft<sup>2</sup>

<sup>2</sup> Based on sediment mass loading capacity of 3.64 lb/ft<sup>2</sup> filtration treatment area

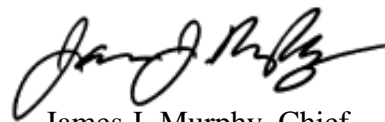
<sup>3</sup> Based on calculation of 600 lbs of sediment per acre annually



Be advised a detailed maintenance plan is mandatory for any project with a Stormwater BMP subject to the Stormwater Management Rules, N.J.A.C. 7:8. The plan must include all of the items identified in Stormwater Management Rules, N.J.A.C. 7:8-5.8. Such items include, but are not limited to, the list of indication of problems in the system, and training of maintenance personnel. Additional information can be found in Chapter 8: Maintenance and Retrofit of Stormwater Management Measures.

If you have any questions regarding the above information, please contact Shashi Nayak of my office at (609) 633-7021.

Sincerely,



James J. Murphy, Chief  
Bureau of Nonpoint Pollution Control

Attachment: Maintenance Plan

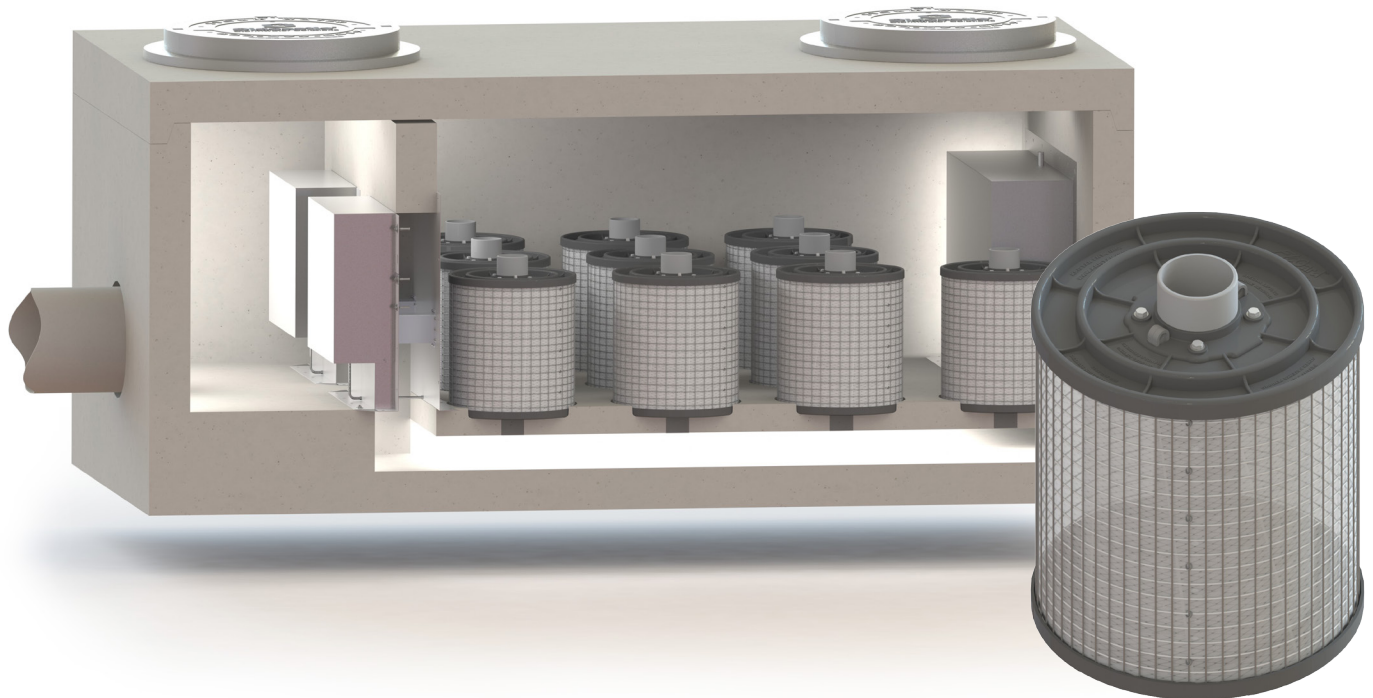
cc: Chron File  
Richard Magee, NJCAT  
Vince Mazzei, NJDEP - DLUR  
Ravi Patraju, NJDEP - BES  
Gabriel Mahon, NJDEP - BNPC  
Shashi Nayak, NJDEP - BNPC

# **PERKFILTER**<sup>™</sup>

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## INSPECTION AND MAINTENANCE GUIDE

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November 4, 2015

Version 1



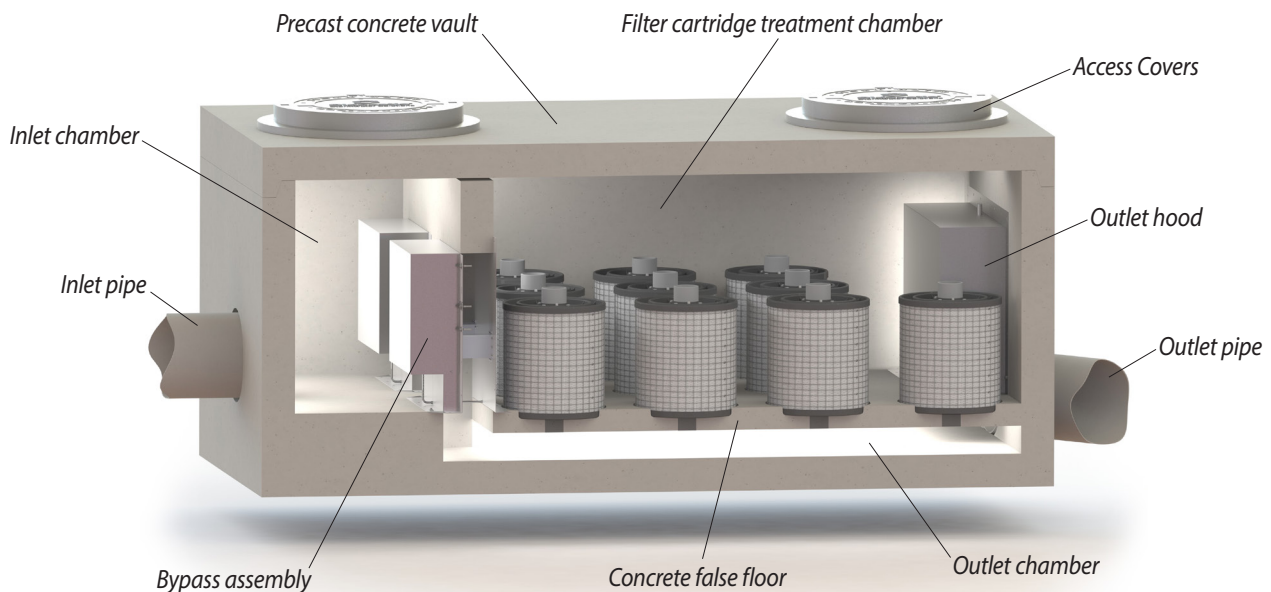
## PerkFilter™ Media Filtration System

### Description

The PerkFilter is a stormwater treatment device used to remove pollutants from urban runoff. Impervious surfaces and other urban and suburban landscapes generate a variety of contaminants that can enter stormwater and pollute downstream receiving waters. The PerkFilter is a media-filled cartridge filtration device designed to capture and retain sediment, gross solids, metals, nutrients, hydrocarbons, and trash and debris. As with any stormwater treatment system, the PerkFilter requires regular periodic maintenance to sustain optimum system performance.

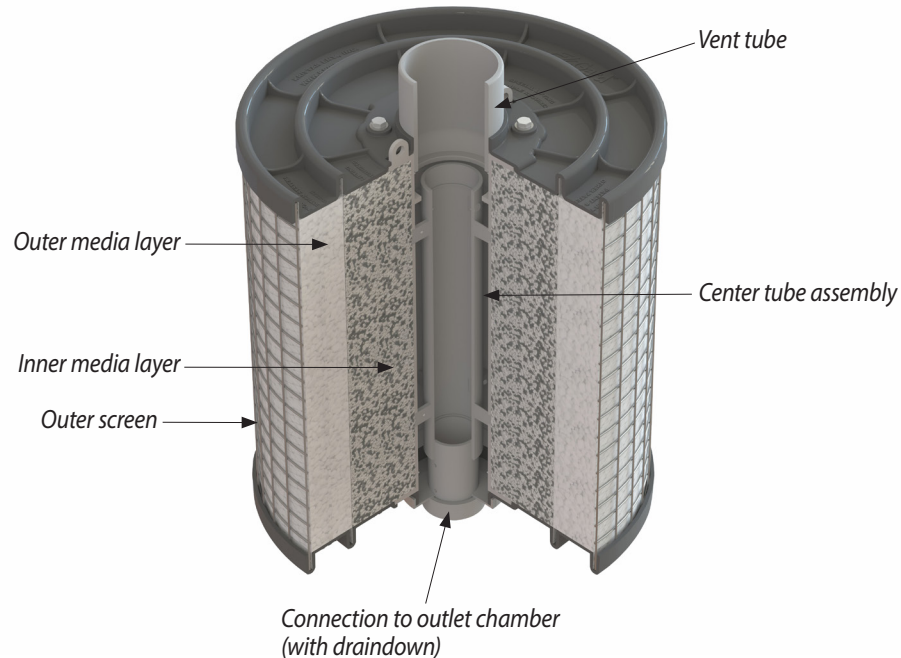
### Function

The PerkFilter is a water quality treatment system consisting of three chambers: an inlet chamber, a filter cartridge treatment chamber, and an outlet chamber (Figure 1). Stormwater runoff enters the inlet chamber through an inlet pipe, curb opening, or grated inlet. Gross solids are settled out and floating trash and debris are trapped in the inlet chamber. Pretreated flow is then directed to the treatment chamber through an opening in the baffle wall between the inlet chamber and treatment chamber. The treatment chamber contains media-filled filter cartridges (Figure 2) that use physical and chemical processes to remove pollutants. During a storm event, runoff pools in the treatment chamber before passing radially through the cylindrical cartridges from the outside surface, through the media for treatment, and into the center of the cartridge. At the center of the cartridge is a center tube assembly designed to distribute the hydraulic load evenly across the surface of the filter cartridge and control the treatment flow rate. The center tube assembly discharges treated flow through the false floor and into the outlet chamber. A draindown feature built into each cartridge allows the treatment chamber to dewater between storm events.



**Figure 1. Schematic of the PerkFilter system.**

All PerkFilter systems include a high flow bypass assembly to divert flow exceeding the treatment capacity of the filter cartridges around the treatment chamber. The bypass assembly routes peak flow from the inlet chamber directly to the outlet chamber, bypassing the treatment chamber to prevent sediment and other captured pollutants from being scoured and re-entrained by high flow. Treated flow and bypass flow merge in the outlet chamber for discharge by a single outlet pipe.



**Figure 2. Schematic of the PerkFilter cartridge.**

### **Configuration**

The PerkFilter structure may consist of a vault, manhole, or catch basin configuration. Catch basin units may be fabricated from concrete or steel. Internal components including the PerkFilter cartridges are manufactured from durable plastic and stainless steel components and hardware. All cartridges are 18 inches in diameter and are available in two heights: 12-inch and 18-inch. Cartridges may be used alone or may be stacked (Figure 3) to provide 24-inch and 30-inch combinations. The capacity of each cartridge or cartridge combination is dictated by the allowable operating rate of the media and the outer surface area of the cartridge. Thus, taller cartridges have greater treatment capacity than shorter cartridges but they also require more hydraulic drop across the system. Cartridges may be filled with a wide variety of media but the standard mix is composed of zeolite, perlite, and carbon (ZPC).

Access to an installed PerkFilter system is typically provided by ductile iron castings or hatch covers. The location and number of access appurtenances is dependent on the size and configuration of the system.

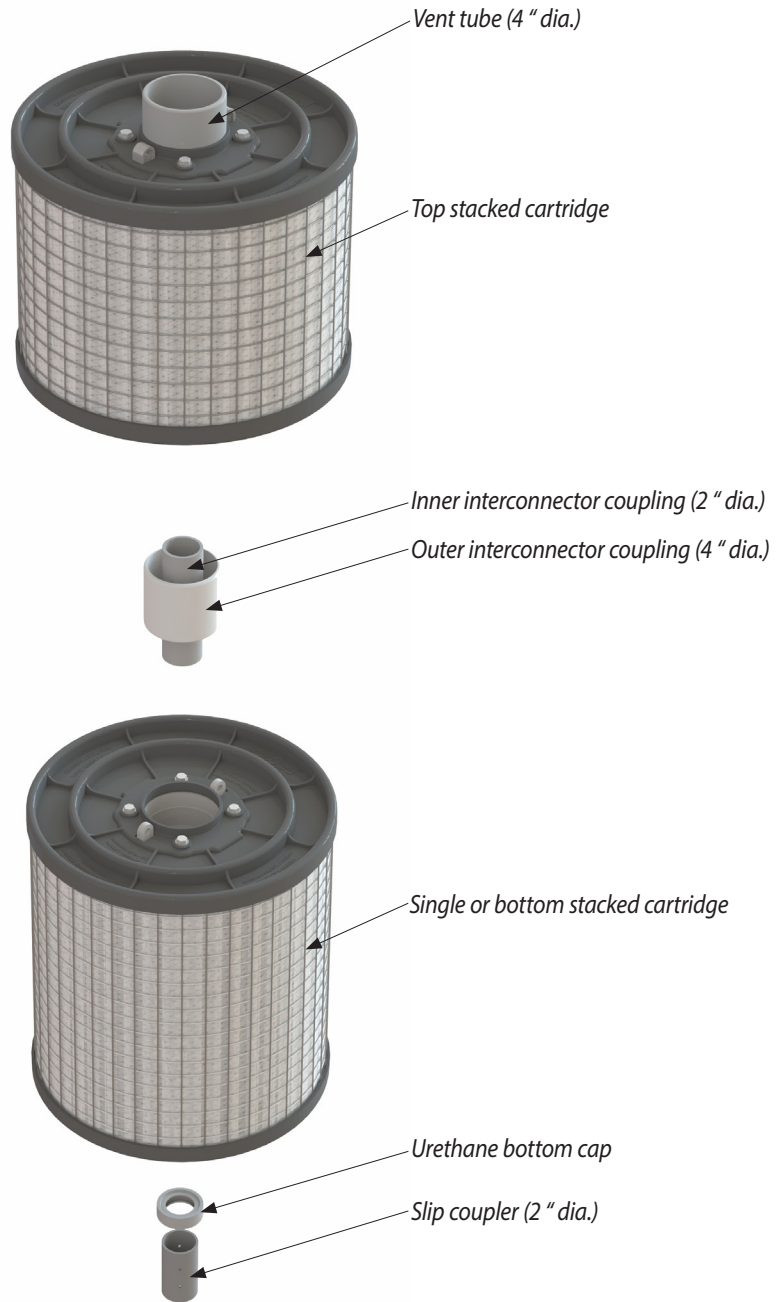


Figure 3. Schematic of stacked cartridges and connector components.

## ***Maintenance Overview***

State and local regulations require all stormwater management systems to be inspected on a regular basis and maintained as necessary to ensure performance and protect downstream receiving waters. Maintenance prevents excessive pollutant buildup that can limit system performance by reducing the operating capacity and increasing the potential for scouring of pollutants during periods of high flow.

## ***Inspection and Maintenance Frequency***

The PerkFilter should be inspected on a regular basis, typically twice per year, and maintained as required. Initially, inspections of a new system should be conducted more frequently to help establish an appropriate site-specific inspection frequency. The maintenance frequency will be driven by the amount of runoff and pollutant loading encountered by a given system. In most cases, the optimum maintenance interval will be one to three years. Inspection and maintenance activities should be performed only during dry weather periods.

## ***Inspection Equipment***

The following equipment is helpful when conducting PerkFilter inspections:

- Recording device (pen and paper form, voice recorder, iPad, etc.)
- Suitable clothing (appropriate footwear, gloves, hardhat, safety glasses, etc.)
- Traffic control equipment (cones, barricades, signage, flagging, etc.)
- Socket and wrench for bolt-down access covers
- Manhole hook or pry bar
- Flashlight
- Tape measure
- Measuring stick or sludge sampler
- Long-handled net (optional)

## ***Inspection Procedures***

PerkFilter inspections are visual and may be conducted from the ground surface without entering the unit. To complete an inspection, safety measures including traffic control should be deployed before the access covers are removed. Once the covers have been removed, the following items should be checked and recorded (see form provided at the end of this document) to determine whether maintenance is required:

- Inspect the internal components and note whether there are any broken or missing parts. In the unlikely event that internal parts are broken or missing, contact Oldcastle Stormwater Solutions at (800) 579-8819 to determine appropriate corrective action.
- Note whether the inlet pipe is blocked or obstructed. The outlet pipe is covered by a removable outlet hood and cannot be observed without entering the unit.

- Observe, quantify, and record the accumulation of floating trash and debris in the inlet chamber. The significance of accumulated floating trash and debris is a matter of judgment. A long-handled net may be used to retrieve the bulk of trash and debris at the time of inspection if full maintenance due to accumulation of floating oils or settled sediment is not yet warranted.
- Observe, quantify, and record the accumulation of oils in the inlet chamber. The significance of accumulated floating oils is a matter of judgment. However, if there is evidence of an oil or fuel spill, immediate maintenance by appropriate certified personnel is warranted.
- Observe, quantify, and record the average accumulation of sediment in the inlet chamber and treatment chamber. A calibrated dipstick, tape measure, or sludge sampler may be used to determine the amount of accumulated sediment in each chamber. The depth of sediment may be determined by calculating the difference between the measurement from the rim of the PerkFilter to the top of the accumulated sediment and the measurement from the rim of the PerkFilter to the bottom of the PerkFilter structure. Finding the top of the accumulated sediment below standing water takes some practice and a light touch, but increased resistance as the measuring device is lowered toward the bottom of the unit indicates the top of the accumulated sediment.
- Finally, observe, quantify, and record the amount of standing water in the treatment chamber around the cartridges. If standing water is present, do not include the depth of sediment that may have settled out below the standing water in the measurement.

### ***Maintenance Triggers***

Maintenance should be scheduled if any of the following conditions are identified during the inspection:

- Internal components are broken or missing.
- Inlet piping is obstructed.
- The accumulation of floating trash and debris that cannot be retrieved with a net and/or oil in the inlet chamber is significant.
- There is more than 6" of accumulated sediment in the inlet chamber.
- There is more than 4" of accumulated sediment in the treatment chamber.
- There is more than 4" of standing water in the treatment chamber more than 24 hours after end of rain event.
- A hazardous material release (e.g. automotive fluids) is observed or reported.
- The system has not been maintained for 3 years (wet climates) to 5 years (dry climates).

### ***Maintenance Equipment***

The following equipment is helpful when conducting PerkFilter maintenance:

- Suitable clothing (appropriate footwear, gloves, hardhat, safety glasses, etc.)
- Traffic control equipment (cones, barricades, signage, flagging, etc.)
- Socket and wrench for bolt-down access covers
- Manhole hook or pry bar
- Confined space entry equipment, if needed

- Flashlight
- Tape measure
- 9/16" socket and wrench to remove hold-down struts and filter cartridge tops
- Replacement filter cartridges
- Vacuum truck with water supply and water jet

Contact Oldcastle Stormwater Solutions at **(800) 579-8819** for replacement filter cartridges. A lead time of four weeks is recommended.

### ***Maintenance Procedures***

Maintenance should be conducted during dry weather when no flow is entering the system. Confined space entry is necessary to maintain vault and manhole PerkFilter configurations. Only personnel that are OSHA Confined Space Entry trained and certified may enter underground structures. Confined space entry is not required for catch basin PerkFilter configurations. Once safety measures such as traffic control are deployed, the access covers may be removed and the following activities may be conducted to complete maintenance:

- Remove floating trash, debris, and oils from the water surface in the inlet chamber using the extension nozzle on the end of the boom hose of the vacuum truck. Continue using the vacuum truck to completely dewater the inlet chamber and evacuate all accumulated sediment from the inlet chamber. Some jetting may be required to fully remove sediment. The inlet chamber does not need to be refilled with water after maintenance is complete. The system will fill with water when the next storm event occurs.
- Remove the hold-down strut from each row of filter cartridges and then remove the top of each cartridge (the top is held on by four 9/16" bolts) and use the vacuum truck to evacuate the spent media. When empty, the spent cartridges may be easily lifted off their slip couplers and removed from the vault. The couplers may be left inserted into couplings cast into the false floor to prevent sediment and debris from being washed into the outlet chamber during washdown.
- Once all the spent cartridges have been removed from the structure, the vacuum truck may be used to evacuate all accumulated sediment from the treatment chamber. Some jetting may be required to fully remove sediment. Take care not to wash sediment and debris through the openings in the false floor and into the outlet chamber. All material removed from the PerkFilter during maintenance including the spent media must be disposed of in accordance with local, state, and/or federal regulations. In most cases, the material may be handled in the same manner as disposal of material removed from sumped catch basins or manholes.
- Place a fresh cartridge in each cartridge position using the existing slip couplers and urethane bottom caps. If the vault is equipped with stacked cartridges, the existing outer and inner interconnector couplers must be used between the stacked cartridges to provide hydraulic connection. Transfer the existing vent tubes from the spent cartridges to the fresh cartridges. Finally, refit the struts to hold the fresh cartridges in place.
- Securely replace access covers, as appropriate.
- Make arrangements to return the empty spent cartridges to Oldcastle Stormwater Solutions.



<h2 style="margin: 0;">PerkFilter</h2> <h3 style="margin: 0;">Inspection and Maintenance Log</h3>	
<b>Location</b> _____	
<b>Structure Configuration and Size:</b> <input type="checkbox"/> Vault _____ feet x _____ feet <input type="checkbox"/> Manhole _____ diameter <input type="checkbox"/> Catch Basin _____ feet x _____ feet	<b>Inspection Date</b> _____
<b>Number and Height of Cartridges:</b> Count _____ each <input type="checkbox"/> 12" <input type="checkbox"/> 18" <input type="checkbox"/> 24" <input type="checkbox"/> 30"	
<b>Media Type:</b> <input type="checkbox"/> ZPC <input type="checkbox"/> Perlite <input type="checkbox"/> Other _____	
<b><i>Condition of Internal Components</i></b> <input type="checkbox"/> Good <input type="checkbox"/> Damaged <input type="checkbox"/> Missing	Notes:
<b><i>Inlet Pipe Blockage or Obstruction</i></b> <input type="checkbox"/> Yes <input type="checkbox"/> No	Notes:
<b><i>Floating Trash and Debris</i></b> <input type="checkbox"/> Significant <input type="checkbox"/> Not Significant	Notes:
<b><i>Floating Oils</i></b> <input type="checkbox"/> Significant <input type="checkbox"/> Not Significant <input type="checkbox"/> Spill	Notes:
<b><i>Sediment Depth in Inlet Chamber</i></b> <input type="checkbox"/> Inches of Sediment: _____	Notes:
<b><i>Sediment Depth in Treatment Chamber</i></b> <input type="checkbox"/> Inches of Sediment: _____	Notes:
<b><i>Standing Water in Treatment Chamber</i></b> <input type="checkbox"/> Inches of Standing Water: _____	Notes:
<b><i>Maintenance Required</i></b> <input type="checkbox"/> Yes – Schedule Maintenance <input type="checkbox"/> No – Inspect Again in _____ Months	



# PERKFILTER™

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## Inspection and Maintenance Guide

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# PerkFilter™ Media Filtration System

## Description

The PerkFilter is a stormwater treatment device used to remove pollutants from urban runoff. Impervious surfaces and other urban and suburban landscapes generate a variety of contaminants that can enter stormwater and pollute downstream receiving waters. The PerkFilter is a media-filled cartridge filtration device designed to capture and retain sediment, gross solids, metals, nutrients, hydrocarbons, and trash and debris. As with any stormwater treatment system, the PerkFilter requires periodic maintenance to sustain optimum system performance.

## Function

The PerkFilter is a water quality treatment system consisting of three chambers: an inlet chamber, a filter cartridge treatment chamber, and an outlet chamber (Figure 1). Stormwater runoff enters the inlet chamber through an inlet pipe, curb opening, or grated inlet. Gross solids are settled out, and floating trash and debris are trapped in the inlet chamber. Pretreated flow is then directed to the treatment chamber through an opening in the baffle wall between the inlet chamber and treatment chamber. The treatment chamber contains media-filled filter cartridges (Figure 2) that use physical and chemical processes to remove pollutants. During a storm event, runoff pools in the treatment chamber before passing radially through the cylindrical cartridges from the outside surface, through the media for treatment, and into the center of the cartridge. At the center of the cartridge is a center tube assembly designed to distribute the hydraulic load evenly across the surface of the filter cartridge and control the treatment flow rate. The center tube assembly discharges treated flow through the false floor and into the outlet chamber. A draindown feature built into each cartridge allows the treatment chamber to dewater between storm events.

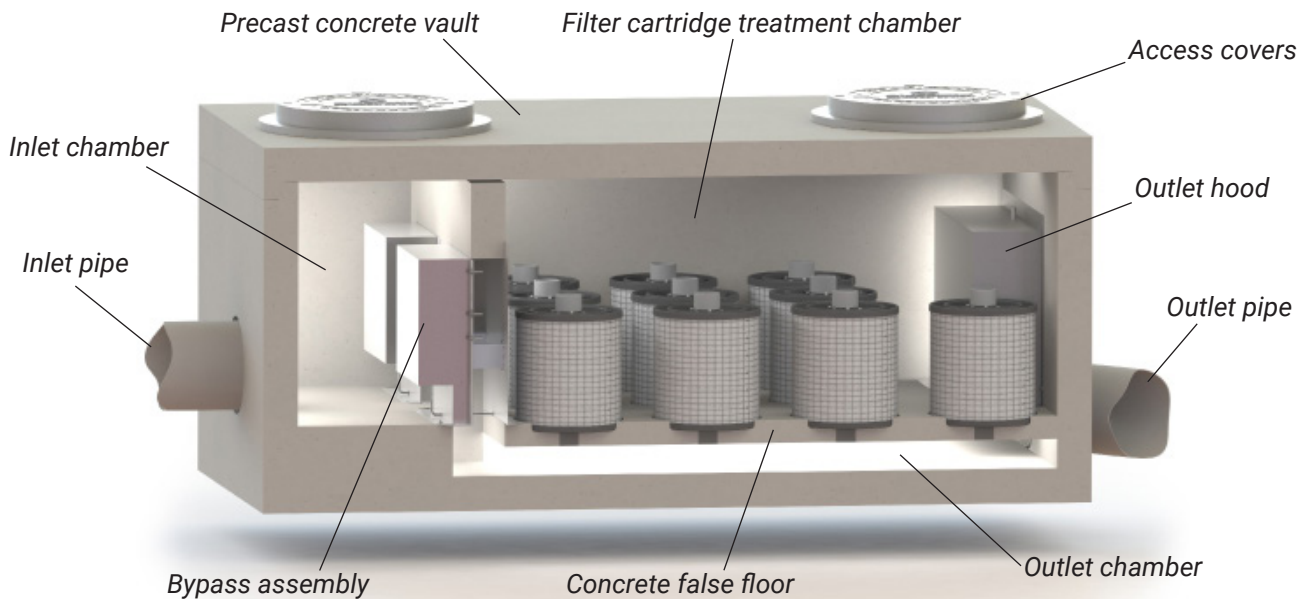
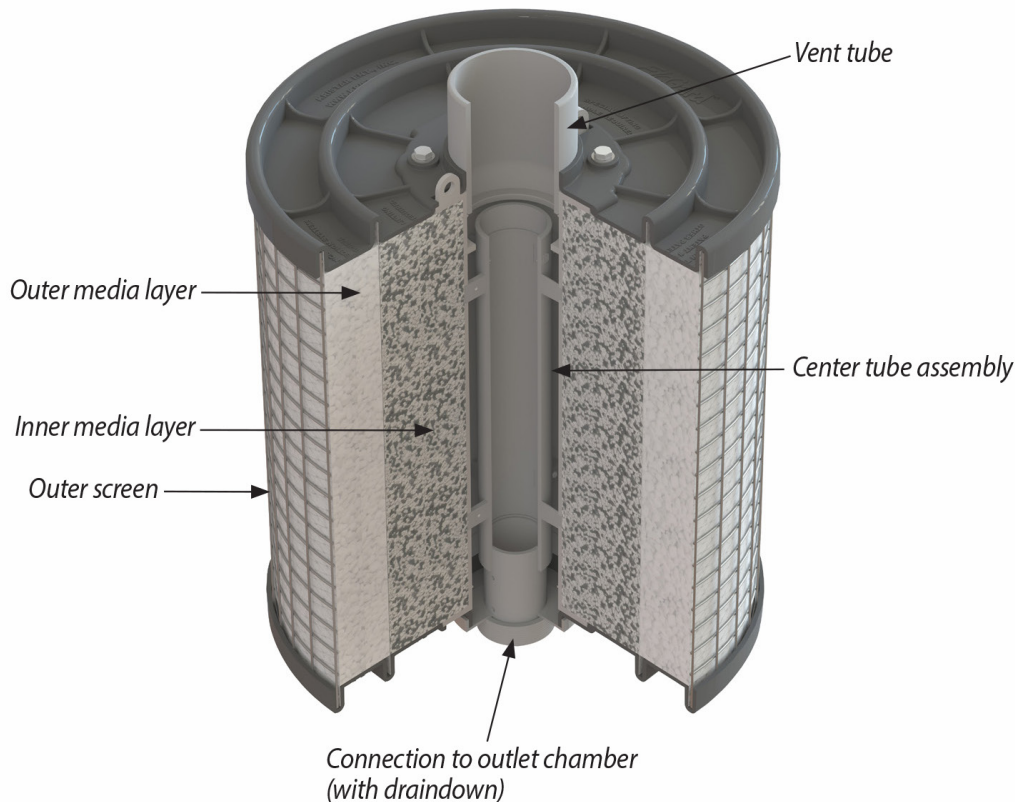


Figure 1. Schematic of the PerkFilter system.

All PerkFilter systems include a high-flow bypass assembly to divert flow exceeding the treatment capacity of the filter cartridges around the treatment chamber. The bypass assembly routes peak flow from the inlet chamber directly to the outlet chamber, bypassing the treatment chamber to prevent sediment and other captured pollutants from being scoured and re-entrained by high flow. Treated flow and bypass flow merge in the outlet chamber for discharge by a single outlet pipe.

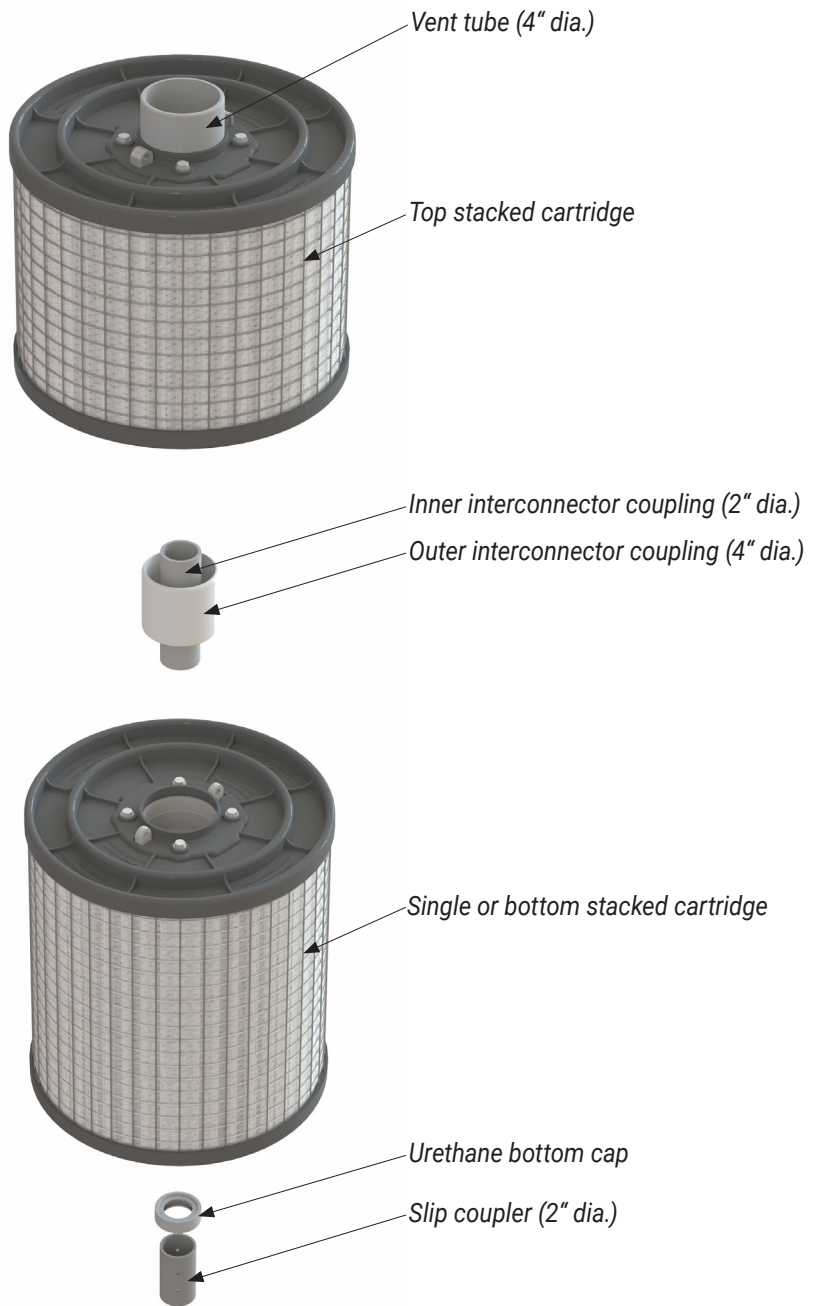


**Figure 2. Schematic of PerkFilter cartridge.**

## **Configuration**

The PerkFilter structure may consist of a vault, manhole, or catch basin configuration. Catch basin units may be fabricated from concrete or steel. Internal components including the PerkFilter cartridges are manufactured from durable plastic and stainless steel components and hardware. All cartridges are 18 inches in diameter and are available in two heights: 12-inch and 18-inch. Cartridges may be used alone or may be stacked (Figure 3) to provide 24-inch and 30-inch combinations. The capacity of each cartridge or cartridge combination is dictated by the allowable operating rate of the media and the outer surface area of the cartridge. Thus, taller cartridges have greater treatment capacity than shorter cartridges, but they also require more hydraulic drop across the system. Cartridges may be filled with a wide variety of media but the standard mix is composed of zeolite, perlite and carbon (ZPC).

Access to an installed PerkFilter system is typically provided by ductile iron castings or hatch covers. The location and number of access appurtenances is dependent on the size and configuration of the system.



**Figure 3. Schematic of stacked cartridges and connector components.**

## **Maintenance Overview**

State and local regulations require all stormwater management systems to be inspected on a periodic basis and maintained as necessary to ensure performance and protect downstream receiving waters. Maintenance prevents excessive pollutant buildup that can limit system performance by reducing the operating capacity and increasing the potential for scouring of pollutants during periods of high flow.

## **Inspection and Maintenance Frequency**

The PerkFilter should be inspected on a periodic basis, typically twice per year, and maintained as required. Initially, inspections of a new system should be conducted more frequently to help establish an appropriate site-specific inspection frequency. The maintenance frequency will be driven by the amount of runoff and pollutant loading encountered by a given system. In most cases, the optimum maintenance interval will be one to three years. Inspection and maintenance activities should be performed only during dry weather periods.

## **Inspection Equipment**

The following equipment is helpful when conducting PerkFilter inspections:

- Recording device (pen and paper form, voice recorder, iPad, etc.)
- Suitable clothing (appropriate footwear, gloves, hardhat, safety glasses, etc.)
- Traffic control equipment (cones, barricades, signage, flagging, etc.)
- Socket and wrench for bolt-down access covers
- Manhole hook or pry bar
- Flashlight
- Tape measure
- Measuring stick or sludge sampler
- Long-handled net (optional)

## **Inspection Procedures**

PerkFilter inspections are visual and may be conducted from the ground surface without entering the unit. To complete an inspection, safety measures including traffic control should be deployed before the access covers are removed. Once the covers have been removed, the following items should be checked and recorded (see form provided at the end of this document) to determine whether maintenance is required:

- Inspect the internal components and note whether there are any broken or missing parts. In the unlikely event that internal parts are broken or missing, contact Oldcastle Infrastructure at (800) 579-8819 to determine appropriate corrective action.
- Note whether the inlet pipe is blocked or obstructed. The outlet pipe is covered by a removable outlet hood and cannot be observed without entering the unit.
- Observe, quantify and record the accumulation of floating trash and debris in the inlet chamber. The significance of accumulated floating trash and debris is a matter of judgment. A long-handled net may be used to retrieve the bulk of trash and debris at the time of inspection if full maintenance due to accumulation of floating oils or settled sediment is not yet warranted.

- Observe, quantify and record the accumulation of oils in the inlet chamber. The significance of accumulated floating oils is a matter of judgment. However, if there is evidence of an oil or fuel spill, immediate maintenance by appropriate certified personnel is warranted.
- Observe, quantify and record the average accumulation of sediment in the inlet chamber and treatment chamber. A calibrated dipstick, tape measure, or sludge sampler may be used to determine the amount of accumulated sediment in each chamber. The depth of sediment may be determined by calculating the difference between the measurement from the rim of the PerkFilter to the top of the accumulated sediment, and the measurement from the rim of the PerkFilter to the bottom of the PerkFilter structure. Finding the top of the accumulated sediment below standing water takes some practice and a light touch, but increased resistance as the measuring device is lowered toward the bottom of the unit indicates the top of the accumulated sediment.
- Finally, observe, quantify and record the amount of standing water in the treatment chamber around the cartridges. If standing water is present, do not include the depth of sediment that may have settled out below the standing water in the measurement.

## **Maintenance Triggers**

Maintenance should be scheduled if any of the following conditions are identified during the inspection:

- Internal components are broken or missing.
- Inlet piping is obstructed.
- The accumulation of floating trash and debris that cannot be retrieved with a net and/or oil in the inlet chamber is significant.
- There is more than 6" of accumulated sediment in the inlet chamber.
- There is more than 4" of accumulated sediment in the treatment chamber.
- There is more than 4" of standing water in the treatment chamber more than 24 hours after end of rain event.
- A hazardous material release (e.g. automotive fluids) is observed or reported.
- The system has not been maintained for 3 years (wet climates) to 5 years (dry climates).

## **Maintenance Equipment**

The following equipment is helpful when conducting PerkFilter maintenance:

- Suitable clothing (appropriate footwear, gloves, hardhat, safety glasses, etc.)
- Traffic control equipment (cones, barricades, signage, flagging, etc.)
- Socket and wrench for bolt-down access covers
- Manhole hook or pry bar
- Confined space entry equipment, if needed
- Flashlight
- Tape measure
- 9/16" socket and wrench to remove hold-down struts and filter cartridge tops
- Replacement filter cartridges
- Vacuum truck with water supply and water jet

Contact Oldcastle Infrastructure at (800) 579-8819 for replacement filter cartridges. A lead time of four weeks is recommended.

## Maintenance Procedures

Maintenance should be conducted during dry weather when no flow is entering the system. Confined space entry is necessary to maintain vault and manhole PerkFilter configurations. Only personnel that are OSHA Confined Space Entry trained and certified may enter underground structures. Confined space entry is not required for catch basin PerkFilter configurations. Once safety measures such as traffic control are deployed, the access covers may be removed and the following activities may be conducted to complete maintenance:

- Remove floating trash, debris and oils from the water surface in the inlet chamber using the extension nozzle on the end of the boom hose of the vacuum truck. Continue using the vacuum truck to completely dewater the inlet chamber and evacuate all accumulated sediment from the inlet chamber. Some jetting may be required to fully remove sediment. The inlet chamber does not need to be refilled with water after maintenance is complete. The system will fill with water when the next storm event occurs.
- Remove the hold-down strut from each row of filter cartridges and then remove the top of each cartridge (the top is held on by four 9/16" bolts) and use the vacuum truck to evacuate the spent media. When empty, the spent cartridges may be easily lifted off their slip couplers and removed from the vault. The couplers may be left inserted into couplings cast into the false floor to prevent sediment and debris from being washed into the outlet chamber during washdown.
- Once all the spent cartridges have been removed from the structure, the vacuum truck may be used to evacuate all accumulated sediment from the treatment chamber. Some jetting may be required to fully remove sediment. Take care not to wash sediment and debris through the openings in the false floor and into the outlet chamber. All material removed from the PerkFilter during maintenance including the spent media must be disposed of in accordance with local, state, and/or federal regulations. In most cases, the material may be handled in the same manner as disposal of material removed from sumped catch basins or manholes.
- Place a fresh cartridge in each cartridge position using the existing slip couplers and urethane bottom caps. If the vault is equipped with stacked cartridges, the existing outer and inner interconnector couplers must be used between the stacked cartridges to provide hydraulic connection. Transfer the existing vent tubes from the spent cartridges to the fresh cartridges. Finally, refit the struts to hold the fresh cartridges in place.
- Securely replace access covers, as appropriate.
- Make arrangements to return the empty spent cartridges to Oldcastle Infrastructure.



# PerkFilter Inspection and Maintenance Log

Location \_\_\_\_\_

**Structure Configuration and Size:**

Inspection Date \_\_\_\_\_

- Vault \_\_\_\_ feet x \_\_\_\_ feet
- Manhole \_\_\_\_ feet diameter
- Catch Basin \_\_\_\_ feet x \_\_\_\_ feet

**Number and Height of Cartridge Stacks:**

**Media Type:**

Count \_\_\_\_ each  12"  18"  24"  30"

ZPC  Perlite  Other \_\_\_\_\_

***Condition of Internal Components***

Notes:

- Good       Damaged       Missing

***Inlet or Outlet Blockage or Obstruction***

Notes:

- Yes       No

***Floating Trash and Debris***

Notes:

- Significant       Not Significant

***Floating Oils***

Notes:

- Significant       Not Significant       Spill

***Sediment Depth in Inlet Chamber***

Notes:

Inches of Sediment: \_\_\_\_\_

***Sediment Depth in Treatment Chamber***

Notes:

Inches of Sediment: \_\_\_\_\_

***Standing Water in Treatment Chamber***

Notes:

Inches of Standing Water: \_\_\_\_\_

***Maintenance Required***

- Yes - Schedule Maintenance       No - Inspect Again in \_\_\_\_\_ Months

# PERKFILTER™

## OUR MARKETS



**BUILDING  
STRUCTURES**



**COMMUNICATIONS**



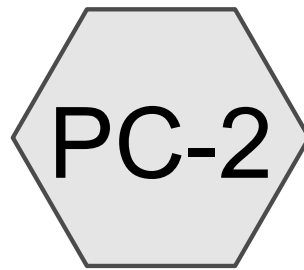
**WATER**



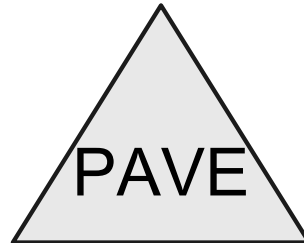
**ENERGY**



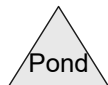
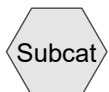
**TRANSPORTATION**



PC-2



# POROUS PAVEMENT



## **Project Notes**

Rainfall events imported from "200330\_Analysis.hcp"

## 200811\_Model\_SCS

Prepared by Maser Consulting

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### Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-MER 1YR	NRCC 24-hr	C	Default	24.00	1	2.74	2
2	2-MER 2YR	NRCC 24-hr	C	Default	24.00	1	3.31	2
3	3-MER 10YR	NRCC 24-hr	C	Default	24.00	1	5.02	2
4	4-MER 25YR	NRCC 24-hr	C	Default	24.00	1	6.20	2
5	5-MER 100YR	NRCC 24-hr	C	Default	24.00	1	8.35	2
6	NJDEP WQ	NJ DEP 2-hr		Default	2.00	1	1.25	2

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### Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.040	39	>75% Grass cover, Good, HSG A (PC-2)
0.012	61	>75% Grass cover, Good, HSG B (PC-2)
0.101	98	Paved parking, HSG A (PC-2)
0.054	98	Paved parking, HSG B (PC-2)
0.018	98	Sidewalks, HSG A (PC-2)
0.005	98	Sidewalks, HSG B (PC-2)
<b>0.230</b>	<b>86</b>	<b>TOTAL AREA</b>

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## Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.159	HSG A	PC-2
0.071	HSG B	PC-2
0.000	HSG C	
0.000	HSG D	
0.000	Other	
<b>0.230</b>		<b>TOTAL AREA</b>

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**Ground Covers (selected nodes)**

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.040	0.012	0.000	0.000	0.000	0.052	>75% Grass cover, Good	PC-2
0.101	0.054	0.000	0.000	0.000	0.155	Paved parking	PC-2
0.018	0.005	0.000	0.000	0.000	0.023	Sidewalks	PC-2
<b>0.159</b>	<b>0.071</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.230</b>	<b>TOTAL AREA</b>	



**200811\_Model\_SCS**

*NJ DEP 2-hr NJDEP WQ Rainfall=1.25"*

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Time span=0.00-54.00 hrs, dt=0.01 hrs, 5401 points  
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious  
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment PC-2: PC-2**

Runoff Area=0.230 ac 77.39% Impervious Runoff Depth=0.80"  
Tc=6.0 min CN=44/98 Runoff=0.52 cfs 0.015 af

**Pond PAVE: POROUS PAVEMENT**

Peak Elev=96.00' Storage=0.000 af Inflow=0.52 cfs 0.015 af  
Outflow=0.52 cfs 0.015 af

**Total Runoff Area = 0.230 ac Runoff Volume = 0.015 af Average Runoff Depth = 0.80"**  
**22.61% Pervious = 0.052 ac 77.39% Impervious = 0.178 ac**

**Summary for Subcatchment PC-2: PC-2**

Runoff = 0.52 cfs @ 1.11 hrs, Volume= 0.015 af, Depth= 0.80"

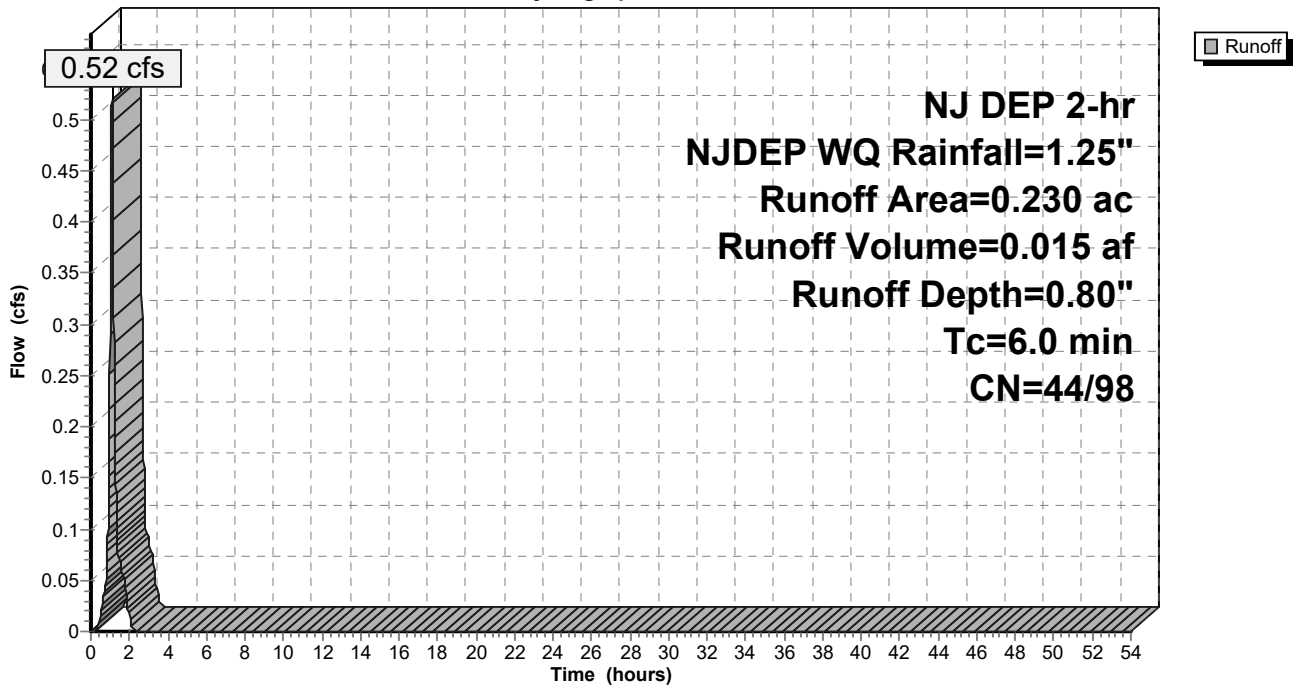
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv. UI as Pervious, Time Span= 0.00-54.00 hrs, dt= 0.01  
 NJ DEP 2-hr NJDEP WQ Rainfall=1.25"

Area (ac)	CN	Description
* 0.018	98	Sidewalks, HSG A
0.101	98	Paved parking, HSG A
0.040	39	>75% Grass cover, Good, HSG A
* 0.005	98	Sidewalks, HSG B
0.054	98	Paved parking, HSG B
0.012	61	>75% Grass cover, Good, HSG B
0.230	86	Weighted Average
0.052	44	22.61% Pervious Area
0.178	98	77.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry,

**Subcatchment PC-2: PC-2**

Hydrograph



**Summary for Pond PAVE: POROUS PAVEMENT**

[42] Hint: Gap in defined storage above volume #1 at 97.50'

[44] Hint: Outlet device #2 is below defined storage

Inflow Area = 0.230 ac, 77.39% Impervious, Inflow Depth = 0.80" for NJDEP WQ event  
 Inflow = 0.52 cfs @ 1.11 hrs, Volume= 0.015 af  
 Outflow = 0.52 cfs @ 1.11 hrs, Volume= 0.015 af, Atten= 0%, Lag= 0.0 min  
 Primary = 0.52 cfs @ 1.11 hrs, Volume= 0.015 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-54.00 hrs, dt= 0.01 hrs  
 Peak Elev= 96.00' @ 1.11 hrs Surf.Area= 0.016 ac Storage= 0.000 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)  
 Center-of-Mass det. time= 0.0 min ( 70.3 - 70.3 )

Volume	Invert	Avail.Storage	Storage Description
#1	96.00'	0.010 af	<b>Porous Pavement - East (Prismatic)</b> Listed below (Recalc) 0.024 af Overall x 40.0% Voids
#2	98.50'	0.014 af	<b>Porous Pavement - West (Prismatic)</b> Listed below (Recalc) 0.034 af Overall x 40.0% Voids
		0.023 af	Total Available Storage

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
96.00	0.016	0.000	0.000
97.50	0.016	0.024	0.024

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
98.50	0.023	0.000	0.000
100.00	0.023	0.034	0.034

Device	Routing	Invert	Outlet Devices
#1	Primary	93.00'	<b>15.0" Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#2	Device 1	93.00'	<b>5.0" Vert. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads

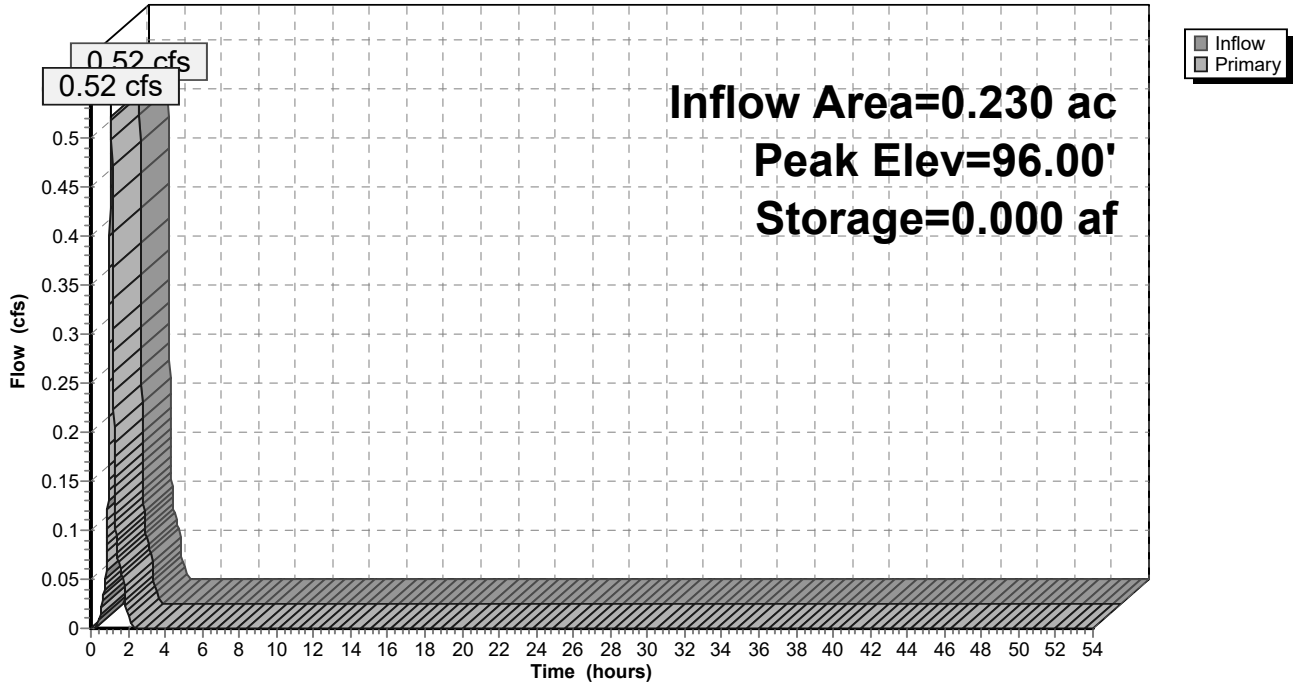
**Primary OutFlow** Max=1.10 cfs @ 1.11 hrs HW=96.00' (Free Discharge)

↑1=Orifice/Grate (Passes 1.10 cfs of 9.11 cfs potential flow)

↑2=Orifice/Grate (Orifice Controls 1.10 cfs @ 8.04 fps)

### Pond PAVE: POROUS PAVEMENT

Hydrograph





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## **APPENDIX F**

### STORMWATER CONVEYANCE SYSTEM DESIGN EXISTING CULVERT ANALYSIS CONDUIT OUTLET PROTECTION

Line No.	Line ID	DnStm Ln No	Inlet ID	Drng Area (ac)	Runoff Coeff (C)	Incr CxA	Total CxA	i Inlet (in/hr)	Incr Q (cfs)	Total Runoff (cfs)	Capac Full (cfs)	Vel Ave (ft/s)	Line Size (in)	Line Type	n-val Pipe	Line Length (ft)	Line Slope (%)	Invert Up (ft)	Invert Dn (ft)	Gnd/Rim El Up (ft)	HGL Up (ft)
1	P-A3-2	Outfall	S-A3-2	0.00	0.00	0.00	1.47	0.00	0.00	7.52	7.94	5.34	18	Cir	0.013	34.989	0.57	80.70	80.50	87.58	81.88
2	P-A3-3	1	S-A3-3	0.00	0.00	0.00	1.22	0.00	0.00	6.28	7.48	3.67	18	Cir	0.013	76.902	0.51	81.09	80.70	89.58	82.42
3	P-A3-4	2	S-A3-4	0.00	0.00	0.00	0.99	0.00	0.00	5.16	6.23	4.76	15	Cir	0.013	116.012	0.93	82.42	81.34	90.65	83.34 j
4	P-A3-5	3	S-A3-5	0.00	0.00	0.00	0.54	0.00	0.00	2.87	6.99	3.59	15	Cir	0.012	80.107	1.00	83.22	82.42	92.30	83.90 j
5	P-A3-6	4	S-A3-6	0.00	0.00	0.00	0.14	0.00	0.00	0.78	9.88	1.99	15	Cir	0.012	113.270	2.00	85.48	83.22	95.69	85.83 j
6	P-A3-7	5	S-A3-7	0.01	0.90	0.01	0.14	6.47	0.06	0.80	3.89	3.44	12	Cir	0.012	38.409	1.02	90.98	90.59	98.03	91.35
7	P-A3-R1	6	S-A3-R1	0.04	0.99	0.04	0.06	7.49	0.30	0.35	1.31	2.16	8	Cir	0.012	23.961	1.00	91.22	90.98	98.10	91.49 j
8	P-A3-R3	7	S-A3-R3	0.02	0.99	0.02	0.02	7.49	0.15	0.15	1.31	1.55	8	Cir	0.012	178.322	1.00	93.01	91.22	101.63	93.19 j
9	P-A3-R2	6	S-A3-R2	0.05	0.99	0.05	0.07	7.49	0.37	0.41	0.91	2.31	8	Cir	0.012	28.892	0.48	91.12	90.98	95.67	91.42
10	P-A2-R4	9	S-A3-R4	0.02	0.99	0.02	0.02	7.49	0.15	0.15	0.93	1.36	8	Cir	0.012	179.741	0.50	92.02	91.12	94.78	92.20
11	P-A3-8	4	S-A3-8	0.12	0.90	0.11	0.41	6.47	0.70	2.35	6.97	4.53	15	Cir	0.012	29.200	0.99	86.81	86.52	92.09	87.42
12	P-A3-9	11	S-A3-9	0.11	0.90	0.10	0.19	6.47	0.64	1.12	9.89	4.24	15	Cir	0.012	48.017	2.00	89.77	88.81	97.45	90.19
13	P-A3-10	12	S-A3-10	0.10	0.90	0.09	0.09	6.47	0.58	0.58	9.89	2.11	15	Cir	0.012	73.121	2.00	91.23	89.77	99.38	91.53 j
14	P-A3-11	3	S-A3-11	0.26	0.99	0.26	0.45	7.49	1.93	3.01	9.44	5.55	15	Cir	0.013	215.043	2.14	88.60	84.00	91.98	89.30
15	P-A3-12	14	S-A3-12	0.00	0.00	0.00	0.19	0.00	0.00	1.29	2.75	2.56	12	Cir	0.012	34.833	0.51	88.78	88.60	93.67	89.33
16	P-A3-R10	15	S-A3-R12	0.00	0.00	0.00	0.07	0.00	0.00	0.48	1.31	2.11	8	Cir	0.012	45.649	1.01	89.24	88.78	96.07	89.57 j
17	P-A3-R12	16	S-1 (59)	0.07	0.99	0.07	0.07	7.49	0.52	0.52	1.31	2.49	8	Cir	0.012	169.226	1.00	90.93	89.24	102.12	91.27 j
18	P-A3-R9 (1)	15	S-1 (70)	0.00	0.00	0.00	0.05	0.00	0.00	0.35	1.31	2.88	8	Cir	0.012	25.856	1.01	89.54	89.28	92.50	89.81
19	P-A3-R9	18	S-A3-R9	0.05	0.99	0.05	0.05	7.49	0.37	0.37	1.30	2.68	8	Cir	0.012	96.949	0.99	90.50	89.54	93.99	90.78
20	P-A3-13	15	A-A3-R13	0.07	0.99	0.07	0.07	7.49	0.52	0.52	1.31	2.21	8	Cir	0.012	176.621	1.00	90.54	88.78	95.03	90.88 j
21	P-A3-R5	11	S-A3-R5	0.00	0.00	0.00	0.06	0.00	0.00	0.42	1.31	1.99	8	Cir	0.012	63.200	1.00	87.44	86.81	95.30	87.74 j
22	P-A3-R7	21	S-A3-R7	0.06	0.99	0.06	0.06	7.49	0.44	0.44	1.31	2.84	8	Cir	0.012	119.403	1.00	88.63	87.44	94.89	88.94
23	P-A3-R6	11	S-A3-R6	0.00	0.00	0.00	0.05	0.00	0.00	0.35	1.31	1.80	8	Cir	0.012	50.006	1.00	87.31	86.81	91.55	87.58 j

Project File: Tract A - Storm Sewers.stm

Number of lines: 45

Date: 8/13/2020

NOTES: Intensity = 182.59 / (Inlet time + 19.10) ^ 0.99 -- Return period = 25 Yrs. ; \*\* Critical depth

Line No.	Line ID	DnStm Ln No	Inlet ID	Drng Area (ac)	Runoff Coeff (C)	Incr CxA	Total CxA	i Inlet (in/hr)	Incr Q (cfs)	Total Runoff (cfs)	Capac Full (cfs)	Vel Ave (ft/s)	Line Size (in)	Line Type	n-val Pipe	Line Length (ft)	Line Slope (%)	Invert Up (ft)	Invert Dn (ft)	Gnd/Rim El Up (ft)	HGL Up (ft)
24	P-A3-R8	23	S-A3-R8	0.05	0.99	0.05	0.05	7.49	0.37	0.37	1.31	2.69	8	Cir	0.012	114.819	1.00	88.46	87.31	91.69	88.74
25	P-A3-R14	2	S-A3-R14	0.00	0.00	0.00	0.14	0.00	0.00	1.01	1.31	3.97	8	Cir	0.012	49.532	1.01	86.00	85.50	91.92	86.48
26	P-A3-R15	25	S-A3-R15	0.14	0.99	0.14	0.14	7.49	1.04	1.04	1.31	3.86	8	Cir	0.012	106.811	1.00	87.07	86.00	91.89	87.55
27	P-A3-14	2	S-26	0.10	0.90	0.09	0.09	6.47	0.58	0.58	6.47	2.93	15	Cir	0.013	102.554	1.00	85.48	84.45	89.20	85.78
28	P-A3-15	1	S-A3-13	0.28	0.90	0.25	0.25	6.47	1.63	1.63	6.46	3.94	15	Cir	0.013	107.801	1.00	83.76	82.68	86.30	84.27
29	P-A2-2	Outfall	S-A2-2	0.01	0.90	0.01	1.10	6.47	0.06	5.41	7.30	4.70	18	Cir	0.013	14.481	0.48	82.51	82.44	88.06	83.47
30	P-A2-3	29	S-A2-3	0.15	0.90	0.14	0.98	6.47	0.87	4.84	10.30	4.54	18	Cir	0.013	12.481	0.96	82.85	82.73	88.10	83.69 j
31	P-A2-4	30	S-A2-4	0.25	0.90	0.23	0.85	6.47	1.45	4.20	12.93	4.29	18	Cir	0.013	35.600	1.52	83.39	82.85	87.00	84.17 j
32	P-A2-5	31	S-A2-5	0.09	0.90	0.08	0.62	6.47	0.52	3.21	10.48	3.75	18	Cir	0.013	201.913	1.00	85.39	83.38	90.50	86.07 j
33	P-A2-6	32	S-A2-6	0.13	0.90	0.12	0.27	6.47	0.76	1.47	9.04	2.77	15	Cir	0.012	149.000	1.67	87.88	85.39	94.50	88.36 j
34	P-A2-7	33	S-A2-7	0.06	0.90	0.05	0.15	6.47	0.35	0.92	6.99	2.54	15	Cir	0.012	160.341	1.00	89.48	87.88	94.60	89.86 j
35	P-A2-8	34	S-A2-8	0.11	0.90	0.10	0.10	6.47	0.64	0.64	8.14	2.36	15	Cir	0.012	67.891	1.36	90.40	89.48	94.06	90.71 j
36	P-A2-9	32	S-A2-9	0.11	0.90	0.10	0.27	6.47	0.64	1.49	4.55	2.66	15	Cir	0.013	40.310	0.50	85.60	85.40	91.20	86.12
37	P-A2-10	36	P-A2-9	0.11	0.90	0.10	0.17	6.47	0.64	1.00	4.57	2.39	15	Cir	0.013	102.010	0.50	86.11	85.60	90.93	86.50
38	P-A3-14	37	S-1 (69)	0.08	0.90	0.07	0.07	6.47	0.47	0.47	7.01	1.93	15	Cir	0.012	73.592	1.01	86.85	86.11	91.85	87.12 j
39	P-A3-16	29	S-A3-16	0.12	0.90	0.11	0.11	6.47	0.70	0.70	2.12	0.93	12	Cir	0.013	81.789	0.35	82.80	82.51	84.58	83.66
40	P-A1-2	Outfall	S-A1-2	0.09	0.90	0.08	0.84	6.47	0.52	5.01	8.04	4.62	18	Cir	0.012	20.000	0.50	82.58	82.48	86.96	83.44
41	P-A1-3	40	S-A1-3	0.10	0.90	0.09	0.46	6.47	0.58	2.79	7.93	3.93	15	Cir	0.013	76.315	1.51	83.85	82.70	88.00	84.52 j
42	P-A1-4	41	S-A1-4	0.10	0.90	0.09	0.37	6.47	0.58	2.32	7.91	3.66	15	Cir	0.013	114.773	1.50	85.56	83.84	93.13	86.17 j
43	P-A1-5	42	S-A1-5	0.31	0.90	0.28	0.28	6.47	1.80	1.80	8.56	3.33	15	Cir	0.012	72.815	1.50	86.65	85.56	94.50	87.18 j
44	P-A1-6	40	S-A1-6	0.24	0.90	0.22	0.30	6.47	1.40	1.84	2.52	2.78	12	Cir	0.013	46.029	0.50	82.81	82.58	85.00	83.54
45	P-A1-7	44	S-A1-7	0.09	0.90	0.08	0.08	6.47	0.52	0.52	2.55	0.92	12	Cir	0.013	50.781	0.51	83.07	82.81	85.23	83.66

Project File: Tract A - Storm Sewers.stm

Number of lines: 45

Date: 8/13/2020

NOTES: Intensity = 182.59 / (Inlet time + 19.10) ^ 0.99 -- Return period = 25 Yrs. ; \*\* Critical depth

HGL Dn (ft)
81.56
82.20
82.60
83.34
83.90
90.90
91.35
91.49
91.35
91.51
87.02
89.09
90.19
84.49
89.30
89.46
89.69
89.52
89.81
89.46
87.42
87.74
87.42

Project File: Tract A - Storm Sewers.stm      Number of lines: 45      Date: 8/13/2020

NOTES: \*\* Critical depth



HGL Dn (ft)
87.58
85.94
86.48
84.70
83.11
83.34
83.63
83.69
84.17
86.07
88.36
89.86
86.07
86.19
86.50
83.63
83.39
83.44
84.52
86.17
83.44
83.65

Project File: Tract A - Storm Sewers.stm	Number of lines: 45	Date: 8/13/2020
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NOTES: \*\* Critical depth



Consulting, Municipal & Environmental Engineers  
 Planners ■ Surveyors ■ Landscape Architects

PROJECT- Hightstown PRC  
 NUMBER- 16001094B  
 BY- TL  
 DATE- 8/3/2020

**CONDUIT OUTLET PROTECTION CALCULATIONS**

TAILWATER > 0.5 x Do

36 " RCP (EXISTING HW)

Do = 3.00  
 Q<sub>(25)</sub> = 61.52 CFS  
 TW = 1.80 (0.2 Do ASSUMED)  
 Wo = 3.00 (Width of culvert @ widest point)  
 q = 20.51 CFS/ft (Q/Wo)

LENGTH OF APRON

$L_a = \frac{3 \times q}{D_o^{1/2}} = 35.52 \text{ FEET}$   
 USE 36.0 FEET

WIDTH OF APRON

$W = (3 \times W_o) + 0.4 \times L_a = 23.21 \text{ FEET}$   
 USE 24.0 FEET

RIPRAP SIZE

$D_{(50)} = \frac{0.016}{T_w} q^{4/3} = 5.99 \text{ INCHES}$   
 USE 6.0 INCHES

APRON THICKNESS

T = 2 x D (50) w/ FILTER FABRIC = 1.00 FEET  
 T = 3 x D (50) = 1.50 FEET  
 USE  USE

RIP RAP QUANTITY

VOLUME =  $\frac{(1/2)(3W_o+W)(L_a)(T)}{27} = 33 \text{ CUBIC YARDS}$

22 CUBIC YARDS

Line No.	Line ID	DnStm Ln No	Inlet ID	Drng Area (ac)	Runoff Coeff (C)	Incr CxA	Total CxA	i Inlet (in/hr)	Incr Q (cfs)	Total Runoff (cfs)	Capac Full (cfs)	Vel Ave (ft/s)	Line Size (in)	Line Type	n-val Pipe	Line Length (ft)	Line Slope (%)	Invert Up (ft)	Invert Dn (ft)
1	P-B1-1	Outfall	S-B2-1	0.00	0.00	0.00	1.74	0.00	0.00	9.34	11.67	4.14	24	Cir	0.013	3.759	0.27	73.33	73.32
2	P-B2-2	1	S-B2-2	0.00	0.00	0.00	0.79	0.00	0.00	4.29	17.33	4.36	24	Cir	0.012	28.000	0.50	75.61	75.47
3	P-B2-3	2	S-B2-3	0.00	0.00	0.00	0.79	0.00	0.00	4.46	17.35	4.26	24	Cir	0.012	117.723	0.50	76.20	75.61
4	P-B2-4	3	S-B2-4	0.31	0.99	0.31	0.72	7.49	2.30	4.15	8.04	4.53	18	Cir	0.012	118.205	0.50	76.79	76.20
5	P-B2-5	4	S-B2-5	0.11	0.90	0.10	0.41	6.47	0.64	2.44	6.98	4.58	15	Cir	0.012	108.363	1.00	79.11	78.03
6	P-B2-6	5	S-B2-6	0.01	0.90	0.01	0.21	6.47	0.06	1.25	6.98	2.64	15	Cir	0.012	48.183	1.00	79.59	79.11
7	P-B2-7	6	S-B2-7	0.08	0.90	0.07	0.20	6.47	0.47	1.22	7.01	3.18	15	Cir	0.012	36.853	1.00	79.96	79.59
8	P-B2-8	7	S-B2-8	0.14	0.90	0.13	0.13	6.47	0.81	0.81	7.01	2.50	15	Cir	0.012	57.827	1.00	80.54	79.96
9	P-B2-18	5	S-B2-18	0.12	0.90	0.11	0.11	6.47	0.70	0.70	3.86	2.73	12	Cir	0.012	43.029	1.00	79.79	79.36
10	P-B2-15	3	S-B2-15	0.08	0.90	0.07	0.07	6.47	0.47	0.47	7.04	2.63	15	Cir	0.012	28.644	1.01	76.99	76.70
11	P-B2-10	1	S-B2-10	0.01	0.90	0.01	0.95	6.47	0.06	5.54	6.81	4.29	18	Cir	0.013	135.491	0.42	76.04	75.47
12	P-B2-11	11	S-B2-11	0.03	0.90	0.03	0.41	6.47	0.17	2.43	4.19	2.01	15	Cir	0.013	49.864	0.42	76.25	76.04
13	P-B2-12	12	S-B2-12	0.05	0.90	0.05	0.38	6.47	0.29	2.30	4.13	1.98	15	Cir	0.013	41.658	0.41	76.42	76.25
14	P-B2-13	13	S-B2-13	0.03	0.90	0.03	0.34	6.47	0.17	2.08	4.16	2.03	15	Cir	0.013	91.509	0.42	76.80	76.42
15	P-B2-20	14	S-B2-20	0.05	0.90	0.05	0.05	6.47	0.29	0.29	2.19	0.39	12	Cir	0.013	34.341	0.38	76.93	76.80
16	P-B2-14	14	S-B2-14	0.27	0.99	0.27	0.27	7.49	2.00	2.00	4.12	2.10	15	Cir	0.013	44.306	0.41	76.98	76.80
17	P-B2-19	11	S-B2-19	0.07	0.90	0.06	0.06	6.47	0.41	0.41	2.73	0.52	12	Cir	0.012	32.068	0.50	76.20	76.04
18	P-B2-21	11	S-B2-21	0.00	0.99	0.00	0.47	0.00	0.00	3.36	5.26	2.74	15	Cir	0.012	28.325	0.56	75.33	75.17
19	P-B2-22	18	S-B2-22	0.47	0.99	0.47	0.47	7.49	3.48	3.48	4.95	2.84	15	Cir	0.012	155.494	0.50	76.11	75.33
20	P-B1-3	Outfall	S-B1-3	0.00	0.00	0.00	1.03	0.00	0.00	2.74	15.56	3.68	24	Cir	0.012	9.922	0.40	75.68	75.64
21	P-B1-4	20	S-B1-4	0.10	0.90	0.09	1.03	6.47	0.58	2.74	15.98	3.65	24	Cir	0.012	9.404	0.43	75.72	75.68
22	P-B1-5	21	S-B1-5	0.31	0.99	0.31	0.37	7.49	2.30	0.99	6.97	2.03	18	Cir	0.012	50.613	0.38	75.91	75.72
23	P-B1-6	22	S-B1-6	0.05	0.90	0.05	0.06	6.47	0.29	0.18	6.97	0.58	18	Cir	0.012	45.277	0.38	76.07	75.90

Project File: Tract B - Storm Sewers.stm

Number of lines: 28

Date: 8/12/2020

NOTES: Intensity = 182.59 / (Inlet time + 19.10) ^ 0.99 -- Return period = 25 Yrs. ; \*\* Critical depth

Line No.	Line ID	DnStm Ln No	Inlet ID	Drng Area (ac)	Runoff Coeff (C)	Incr CxA	Total CxA	i Inlet (in/hr)	Incr Q (cfs)	Total Runoff (cfs)	Capac Full (cfs)	Vel Ave (ft/s)	Line Size (in)	Line Type	n-val Pipe	Line Length (ft)	Line Slope (%)	Invert Up (ft)	Invert Dn (ft)
24	P-B1-7	23	S-B1-7	0.01	0.90	0.01	0.02	6.47	0.06	0.10	13.92	1.00	18	Cir	0.012	128.867	1.50	78.00	76.07
25	P-B1-8	24	S-B1-8	0.01	0.90	0.01	0.01	6.47	0.06	0.06	2.73	1.40	12	Cir	0.012	23.880	0.50	79.12	79.00
26	P-B1-10	21	S-B1-10	0.07	0.90	0.06	0.48	6.47	0.41	3.10	7.00	4.92	15	Cir	0.012	186.991	1.00	77.59	75.72
27	P-B1-11	26	S-B1-11	0.42	0.99	0.42	0.42	7.49	3.11	3.11	7.05	4.95	15	Cir	0.012	27.569	1.02	78.58	78.30
28	P-B1-9	21	S-B1-9	0.10	0.90	0.09	0.09	6.47	0.58	0.58	4.52	1.32	15	Cir	0.013	32.633	0.49	75.88	75.72

Project File: Tract B - Storm Sewers.stm

Number of lines: 28

Date: 8/12/2020

NOTES: Intensity = 182.59 / (Inlet time + 19.10) ^ 0.99 -- Return period = 25 Yrs. ; \*\* Critical depth

Gnd/Rim El Up (ft)	HGL Up (ft)	HGL Dn (ft)
78.76	74.68	74.67
78.96	76.34	76.15
81.09	76.94	76.34
83.45	77.57	76.96
84.86	79.74	78.54
84.53	80.03 j	79.74
84.50	80.40 j	80.03
85.30	80.89 j	80.40
84.29	80.14 j	79.74
80.77	77.26	76.94
80.00	77.07	76.50
79.15	77.42	77.35
79.65	77.49	77.45
79.79	77.66	77.58
79.00	77.79	77.79
79.91	77.82	77.79
78.80	77.36	77.35
80.00	77.42	77.35
84.00	77.89	77.50
80.78	76.26	76.21
78.97	76.30	76.26
79.16	76.33	76.30
79.50	76.35	76.35

Project File: Tract B - Storm Sewers.stm

Number of lines: 28

Date: 8/12/2020

NOTES: \*\* Critical depth

Gnd/Rim El Up (ft)	HGL Up (ft)	HGL Dn (ft)
82.15	78.11 j	76.36
82.15	79.22 j	79.10
82.20	78.30	76.30
83.45	79.29	78.88
78.32	76.30	76.30

Project File: Tract B - Storm Sewers.stm      Number of lines: 28      Date: 8/12/2020

NOTES: \*\* Critical depth

Line No.	Line ID	DnStm Ln No	Inlet ID	Drng Area (ac)	Runoff Coeff (C)	Incr CxA	Total CxA	i Inlet (in/hr)	Incr Q (cfs)	Total Runoff (cfs)	Capac Full (cfs)	Vel Ave (ft/s)	Line Size (in)	Line Type	n-val Pipe	Line Length (ft)	Line Slope (%)	Invert Up (ft)	Invert Dn (ft)
1	P-C-R1	Outfall	s-c-r1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.24	15	Cir	0.012	8.064	0.99	91.60	91.52
2	P-C-R2	1	S-RC-2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.53	8	Cir	0.012	141.562	1.00	97.01	95.60
3	P-C-R3	2	S-C-R3	0.03	0.99	0.03	0.00	0.00	0.00	0.00	0.00	2.34	8	Cir	0.012	54.557	1.01	97.56	97.01
4	P-C-R4	1	S-C-R4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.95	8	Cir	0.012	11.568	0.52	94.66	94.60
5	P-C-R5	4	S-C-R5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.76	8	Cir	0.012	48.981	0.49	94.90	94.66
6	P-C-R6	5	P-C-R6	0.13	0.99	0.13	0.00	0.00	0.00	0.00	0.00	3.84	8	Cir	0.012	154.410	2.00	97.99	94.90
7	P-C-3	Outfall	S-C-3	0.12	0.90	0.11	0.00	0.00	0.00	0.00	0.00	3.53	15	Cir	0.012	12.000	0.51	93.00	92.94
8	P-C-4	7	S-C-4	0.14	0.90	0.13	0.00	0.00	0.00	0.00	0.00	2.84	8	Cir	0.012	62.930	1.00	93.63	93.00
9	P-C-5	8	S-C-5	0.01	0.99	0.01	0.00	0.00	0.00	0.00	0.00	0.96	8	Cir	0.012	75.056	1.00	94.38	93.63

Project File: Tract C - Storm Sewers.stm

Number of lines: 9

Date: 8/12/2020

NOTES: Intensity = 102.61 / (Inlet time + 16.50) ^ 0.82 -- Return period = 25 Yrs. ; \*\* Critical depth

Gnd/Rim El Up (ft)	HGL Up (ft)	HGL Dn (ft)
98.60	92.04	91.96
104.15	97.23	95.79
103.66	97.78	97.23
98.70	95.19	95.03
97.00	95.68 j	95.19
103.83	97.23	95.68
98.23	93.51 j	93.44
101.40	94.05 j	93.66
104.10	94.50	94.05

Project File: Tract C - Storm Sewers.stm      Number of lines: 9      Date: 8/12/2020

NOTES: \*\* Critical depth





Consulting, Municipal & Environmental Engineers  
 Planners ■ Surveyors ■ Landscape Architects

PROJECT- Hightstown PRC  
 NUMBER- 16001094B  
 BY- TL  
 DATE- 8/3/2020

**CONDUIT OUTLET PROTECTION CALCULATIONS**

TAILWATER < 0.5 x Do

15 " HDPE S-C-0

Do = 1.25  
 Q (25) = 0.35 CFS (25-yr storm)  
 TW = 0.00 (2-yr Storm)  
 Wo = 1.25 (Width of culvert @ widest point)  
 q = 0.28 CFS/ft (Q/Wo)

LENGTH OF APRON

$L_a = \frac{1.8 \times q}{D_o^{1/2}} + 7 \times (D_o) = 9.20$  FEET  
 USE 10.0 FEET

WIDTH OF APRON

$W = (3 \times W_o) + L_a = 12.95$  FEET  
 USE 13.0 FEET

RIPRAP SIZE

$D_{(50)} = \frac{0.016}{T_w} q^{4/3} = \text{\#DIV/0!}$  INCHES  
 USE 4.0 INCHES

APRON THICKNESS

T = 2 x D (50) w/ FILTER FABRIC = 0.67 FEET  
 T = 3 x D (50) = 1.00 FEET  
 USE   USE X

RIP RAP QUANTITY VOLUME =  $\frac{(1/2)(3W_o+W)(L_a)(T)}{27} =$   
 = 0 CUBIC YARDS = 3 CUBIC YARDS



## **APPENDIX G**

### **NJDEP APPROVALS**



Permit, con, DAS  
JLO 04-0073A

# State of New Jersey

Department of Environmental Protection

Bradley M. Campbell  
Commissioner

Richard J. Codey  
Acting Governor

Land Use Regulation Program  
P.O. Box 439, Trenton, NJ 08625-0439  
Fax # (609) 292-8115  
www.state.nj.us/dep/landuse

Michael L. Francis, Ph.D.  
Maser Consulting, P.A.  
4621 Nottingham Way  
Suite 8  
Hamilton Square, NJ 08690

MAR 14 2005

RE: Freshwater Wetlands Letter of Interpretation/Line Verification  
Program Interest No.: 1104-04-0002.1  
Activity No.: FWW-FWLI4-040001  
Applicant: John Wolfington, Greystone Capitol Partners, LLC  
Block: 21 Lots: 1-14 & 26  
Block: 30 Lots: 1-7 & 10-13  
Hightstown Borough, Mercer County

Dear Dr. Francis:

This letter is in response to your request for a Letter of Interpretation to verify the jurisdictional boundary of the freshwater wetlands and waters on the referenced property.

In accordance with agreements between the State of New Jersey Department of Environmental Protection, the U.S. Army Corps of Engineers Philadelphia and New York Districts, and the U.S. Environmental Protection Agency, the NJDEP, Land Use Regulation Program is the lead agency for establishing the extent of State and Federally regulated wetlands and waters. The USEPA and/or USACOE retain the right to reevaluate and modify the jurisdictional determination at any time should the information prove to be incomplete or inaccurate.

Based upon the information submitted, and upon a site inspection conducted on January 19, 2005, the Land Use Regulation Program has determined that the wetlands and waters boundary line(s) as shown on the plan map entitled: "ALTA/ACSM LAND TITLE SURVEY FOR GREYSTONE CAPITOL PARTNERS, LLC, LOTS 1, 2, 3, 4, 5, 6, 7, 10, 11, 12, & 13, BLOCK 30, LOTS 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, & 26, BLOCK 21, SITUATE IN BOROUGH OF HIGHTSTOWN, MERCER COUNTY, NEW JERSEY", dated September 22, 2004, last revised, December 21, 2004, and prepared by Maser Consulting P.A., is accurate as shown.

Any activities regulated under the Freshwater Wetlands Protection Act proposed within the wetlands or transition areas or the deposition of any fill material into any water area. will require a permit from this office unless exempted under the Freshwater Wetlands Protection Act, N.J.S.A. 13:9B -1 *et seq.* and implementing rules, N.J.A.C. 7:7A. A copy of this plan, together with the information upon which this boundary determination is based, has been made part of the Program's public records.

Pursuant to the Freshwater Wetlands Protection Act Rules (N.J.A.C. 7:7A-1 *et seq*), you are entitled to rely upon this jurisdictional determination for a period of five years from the date of this letter.

The freshwater wetlands and waters boundary line(s), as determined in this letter, must be shown on any future site development plans. The line(s) should be labeled with the above LURP file number and the following note:

“Freshwater Wetlands/Waters Boundary Line as verified by NJDEP PI No. 1104-04-0002.1”

In addition, the Department has identified State Open Waters on the property, they are noted on the referenced plan: WL OW1 – WL OW 8, WL OW9 – WL OW20, WL OW104 – WL OW100. It should be noted that a buffer is not required adjacent to State Open Waters under the Freshwater Wetlands Protection Act, but a 25-foot buffer is required under the Flood Hazard Control Act. This classification may affect the requirements for an Individual Wetlands Permit (see N.J.A.C. 7:7A-7), the types of Statewide General Permits available for the wetlands portion of this property (see N.J.A.C. 7:7A-5), and the modification available through a transition area waiver (see N.J.A.C. 7:7A-6). Please refer to the Freshwater Wetlands Protection Act (N.J.S.A. 13:9B-1 *et seq*) and implementing rules for additional information.

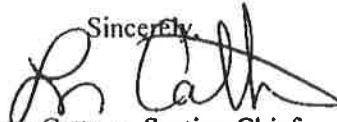
It should be noted that this determination of wetland classification is based on the best information presently available to the Department. The classification is subject to change if this information is no longer accurate, or as additional information is made available to the Department, including, but not limited to, information supplied by the applicant.

This letter in no way legalizes any fill, which may have been placed, or other regulated activities, which may have occurred on-site. Also this determination does not affect your responsibility to obtain any local, State, or Federal permits which may be required.

In accordance with N.J.A.C. 7:7A-1.7, any person who is aggrieved by this decision may request a hearing within 30 days of the decision date by writing to: New Jersey Department of Environmental Protection, Office of Legal Affairs, Attention: Adjudicatory Hearing Requests, PO Box 402, Trenton, NJ 08625-0402. This request must include a completed copy of the Administrative Hearing Request Checklist.

Please contact Courtney Levering of our staff at (609) 777-0454, should you have any questions regarding this letter. Be sure to indicate the Program's interest number in all communication.

Sincerely,

A handwritten signature in black ink, appearing to read 'Lou Cattuna', written over the word 'Sincerely,'.

Lou Cattuna, Section Chief  
Bureau of Inland Regulation

- c: Hightstown Borough Environmental Commission  
Hightstown Borough Municipal Clerk  
Hightstown Borough Municipal Construction Official



## State of New Jersey

PHILIP D. MURPHY  
Governor

SHEILA Y. OLIVER  
Lt. Governor

DEPARTMENT OF ENVIRONMENTAL PROTECTION

Division of Land Use Regulation  
Mail Code 501-02A  
P.O. Box 420  
Trenton, New Jersey 08625-0420  
[www.nj.gov/dep/landuse](http://www.nj.gov/dep/landuse)

CATHERINE R. McCABE  
Commissioner

March 16, 2020

Stanley J. Koreyra  
40 Monmouth Park Highway  
P.O. Box 70  
West Long Branch, NJ 07764

Re: Flood Hazard Area Verification Approval  
File No.: 1104-04-0002.2 LUP 200001  
Applicant: 3PRC, LLC  
Blocks 21 / 30 / 8 and Lots 1-14, 20, & 26 / 1-13 / 12  
Borough of Hightstown, Mercer County

Dear Mr. Koreyra:

This letter is in response to your request for a flood hazard area verification along a Rock Brook at the above-referenced site. The Department has reviewed your application and hereby verifies the flood hazard area elevation and/or limits, floodway limits and riparian zone limits on this site, as depicted on the approved plans described below. The flood hazard area and/or floodway was established using Method 3 (FEMA fluvial method) as described at N.J.A.C. 7:13-3.4(e), which is based on existing FEMA flood mapping in a fluvial flood hazard area. The riparian zone extends 150 feet from the top of bank along both sides of each regulated water on this site. If a discernible bank is not present along a regulated water, the top of bank shall be established per the definition cited in N.J.A.C. 7:13-1.2.

Please note that altering land cover or topography in a flood hazard area, as well as clearing, cutting and/or removing vegetation within a riparian zone, is regulated by the Flood Hazard Area Control Act rules, and may be prohibited or restricted in some cases. A flood hazard area permit is required prior to undertaking any regulated activity within a flood hazard area or riparian zone described at N.J.A.C. 7:13-2.4. Some projects may qualify for a permit-by-rule at N.J.A.C. 7:13-7. All other projects must receive a general permit-by certification under N.J.A.C. 7:13-8, general permit under N.J.A.C. 7:13-9 or an individual permit under N.J.A.C. 7:13-10. Projects situated entirely outside both the flood hazard area and riparian zone do not require a flood hazard area approval.

This verification is based on the best information presently available to the Department, and is subject to change if this information is no longer accurate or if additional information is made available to the Department including, but not limited to, information supplied by the applicant.

The drawings hereby approved were prepared by Eric V. Wilde, P.L.S. and Yosef Portnoy, P.E. of Maser Consulting P.A., dated October 11, 2019, unrevised, and entitled:

“FLOOD HAZARD AREA VERIFICATION PLAN FOR BLOCK 8, LOT 12 BLOCK 21 LOTS 1-14, 20 & 26 BLOCK 30 LOTS 1-13 BOROUGH OF HIGHTSTOWN MERCER COUNTY NEW JERSEY”, sheets 1 & 2 of 2.

Within 90 calendar days of the date of this letter, the applicant shall submit the following information to the clerk of each county in which the site is located, and shall send proof to the Department that this information is recorded on the deed of each lot referenced in the verification:

1. The Department file number for the verification;
2. The approval and expiration dates of the verification;
3. A metes and bounds description of any flood hazard area limit and/or floodway limit approved under the verification;
4. The flood hazard area design flood elevation, or range of elevations if variable, approved under the verification;
5. The width and location of any riparian zone approved under the verification; and
6. The following statement: “The State of New Jersey has determined that all or a portion of this lot lies in a flood hazard area and/or riparian zone. Certain activities in flood hazard areas and riparian zones are regulated by the New Jersey Department of Environmental Protection and some activities may be prohibited on this site or may first require a flood hazard area permit. Contact the Division of Land Use Regulation at (609) 292-0060 or [www.nj.gov/dep/landuse](http://www.nj.gov/dep/landuse) for more information prior to any construction onsite.”

Failure to have this information recorded in the deed of each lot and/or to submit proof of recording to the Department constitutes a violation of the Flood Hazard Area Control Act rules and may result in suspension or termination of the verification and/or subject the applicant to enforcement action pursuant to N.J.A.C. 7:13-24.

A copy of this plan, together with the information upon which this boundary determination is based, has been made part of the Division's public records. Please note that this letter in no way legalizes any fill that may have been previously placed onsite, or any other regulated activities that may have previously occurred. Also, this determination does not affect the applicant's responsibility to obtain any local, State or Federal permits that may be required, such as local building permits or freshwater wetlands approvals.

This verification is valid for five years from its issuance date. A verification shall be extended, modified and/or transferred pursuant to N.J.A.C. 7:13-22. Pursuant to N.J.A.C. 7:13-5.3(c), if the Department issues a verification for a site, and within five years issues a permit for a regulated activity that relies upon the verification at that site, the Department shall automatically reissue the verification upon approval of the permit or authorization so that the verification and permit or authorization have the same expiration date. This automatic reissuance shall occur only once per verification and there is no fee for this reissuance. The reissued verification shall reflect any alterations to the flood hazard area design flood elevation, flood hazard area limit and/or floodway limit that will result from the regulated activities authorized under the permit authorization. All pre-construction and post-construction elevations and limits shall be demarcated on drawings approved under the reissued verification.

In accordance with N.J.A.C. 7:13-23, any person who is aggrieved by this decision may request a hearing within 30 days after notice of the decision is published in the DEP Bulletin by writing to: New Jersey Department of Environmental Protection, Office of Legal Affairs, Attention: Adjudicatory Hearing Requests, Mail Code 401-04L, 401 East State Street P.O. Box 402, 7<sup>th</sup> Floor Trenton, NJ 08625-0402 and

submit a copy of the hearing request to the Director of the Division of Land Use Regulation, at the address set forth at N.J.A.C. 7:13-1.3. This request must include the information listed at N.J.A.C. 7:13-23.1(c) on a adjudicatory hearing request form, available from the Department, at the address set forth at N.J.A.C. 7:13-1.3. The DEP Bulletin is available through the Department's website at [www.nj.gov/dep](http://www.nj.gov/dep) and the Checklist is available through the Division's website at [www.nj.gov/dep/landuse/forms/.html](http://www.nj.gov/dep/landuse/forms/.html).

Please contact Danielle Jones of my staff at [Danielle.Jones@dep.nj.gov](mailto:Danielle.Jones@dep.nj.gov) or by telephone at (609) 633-6563 should you have any questions regarding this letter. Be sure to indicate the Division's file number in all communication.

Sincerely,



Damian T. Friebel, Supervisor  
Bureau of Inland Regulation  
Bureau of Inland Regulation

c. Agent  
Municipal Clerk





**APPENDIX H**  
DRAINAGE AREA MAPS





